Vol. XI SEPTEMBER, 1900 No. 9

THE

NATIONAL GEOGRAPHIC MAGAZINE

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WASHINGTON
PUBLISHED BY THE NATIONAL GEOGRAPHIC SOCIETY

FOR SALE AT BRENTANO'S:
31 UNION SQUARE, NEW YORK; 1015 PENNSYLVANIA AVENUE, WASHINGTON;
218 WABASH AVENUE, CHICAGO; 37 AVENUE DE L'OPERA, PARIS

Price 25 Cents REPRINT **$2.50 a Year**

THE

National Geographic Magazine

AN ILLUSTRATED MONTHLY

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Tsilun balgasu or Shi-thou-tchêng
Siao-ho-rh
Ulan-hotoi (ruins)
IMPERIAL HORSE PASTURAGES
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Shang-tsu Gol or
Kou-mên-tsŭ
Manil
Su
Pan-pien-sha
Liu-kou-yin
San-tao-y
Tsilun balgasu
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Tsedsün tologoi
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Thsing Ho
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1800
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Tiao-i-phu
Huang-ya-khou
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Yen-jan Shan
Ta-hai-tho Shan
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Kün-tu
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Kuliuspa
Kuyotu
Hara Usu
Shi-jen-wan
Tala bulak or Thing-ti thuan
Tsagan obo
Halisutai
L. Kir
Abaga-hara-Ola
Sin-ying-sŭ
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Shi-hia-khou
Ning-yuan
Horinger
Sin-tien
Sha-hu-khou
Thie-shan-phu
Nüu-sin-phu
Wei-phing-phu
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Ning-yuan
Horinger
Sin-tien
Sha-hu-khou
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Nüu-sin-phu
Wei-phing-phu
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Fan-tchi
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Jao Ho
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Ta-yue-khou
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Tung
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Ma-kia-pu
Fou-thai-chuang
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Ma-kia-khiao
Liang-hiang
Kiu-ling-tombs
Huang-thun
Fou-tsien
Kiu-tsien
Pei Ho (Pai Ho)
Hun Ho
Thang Ho
Tchao Ho
Pei Ho (Pai Ho)

116° 117° 118° 119° 120°

YU MA - TCHANG OR IMPERIAL HORSE PASTURAGES

Dolon Nor

Haratsin Wing (Yi-hêng chung)

Harat sin Left Wing

Tumo

PEKIN

TCHÊNG-TE (Jehol)

Phing Thsüan (Pa-kou)

YUNG-PING

Luan-phing

Feng-ning

Ta-tsu-kou

Kien-tchang (Tha-tsü-kou)

Mu-thou-tchêng

Ta-hung-lo Shan 2984

Ning Yi

Yen-Khing

Huai-lai

Huai-jou

Tchang-Phing

Mi-yun

Pao-an 1670

Yung-ting

Lin-yü

Fu-ning

Luan

Tchang-li

Le-thing

Ku-an

Yi

Ting-ling

Sin-tcheng

Cho

Lai-shui

Hsun-Hua

Phing-ku

Ki

Niang-king Shan

Kuan-thou-Shan

Thsien-an

Feng-jun

Hiang-ho

Ning-ho

Fang-shan

Liang-hiang

Thien-tè Shan

Yen-jan Shan

Hoi Shan

Wu-tung-Shan

Ta-hai-tho Shan

Ta-hai Shan

Tu-shan

Ta-ling

Thsing Shan

Thang Shan

Khai-phing

Ku-pei-khou

Shi-liu-ying

Tchao-lu-chuang

Mi-tsu-yü

Huai-jou

Fu-ma-chuang

Lo-shun

Nan-khou

Yang-kê-chuang

Ma-lang-yü

Chai-chuang

Tha-ho

Lu-kou-khiao

Tchang-sin-tien

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Ma-kiu-khiao

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Thsui-thsun

Fung-an

Yang-thsun

Yung-thsing

Sin-khiou

Pei-ho-tien

Sin-tcheng

Ting-ling

Si-ling

Ma-lang-yü

Chien-tien-tchêng-yang-fang

Hong-ling-tchêng

Fan-shan-pin

Nan-thai-tsui

Kiin-tsui-phu

Mao-erh-yü-phu

Kiin-chou-phu

Ma-ma-phu

Si-feng-tcha

Si-wan-tsui

Pai-nua-ku

Chen-ning-phu

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Hia-phu

Chao-tchuan-phu

Tiao-ê-phu

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Tchong-an-ting

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Kiu-tien

Yen-pao-an

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Kuang-ên-thun

Ka-yang-kuan

Ma-ng tombs

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Nü-lan-shan

Thang-shan

Sha-ho

Khai-liu-shu

Sin-ho

Thung-ho

Yen-ho-tchêng

Chai-thang

Tha-ho

Chao-kia-tang

Ta-lung-mên

Tchen-kia-thai

Kiu-ting-tombs

Liu-li-ho

Erh-shi-li-phu

Sang-lin-tien

Tsa-king-kuan

Si-ling

Ma-lang-yü

Pei-ho-tien

Yi-shui

Ma-ng tombs

Kou-mên-tsü

Yen-tsui-wo

Shang-tu-ho-rh

Ulan-hoto (ruins)

Ulan-hudak

L. Ku-che-ha

Tabun-dän

L. Bulenge

Tsiao-ho-rh

Tsilun-balgasu or Shi-thou-tchêng

Tchang-ma-tsa-tchêng

Tê-shi-khou

Kiu-tao-kou

Thou-tao-ying

Ta-ke-rh

Su-kang-miao

Nan-thai-tsui

Si-feng-tcha

Ma-ma-phu

Lung-mên-sou

Ichi-tchêng

Lao-tcha-thun

Yang-thien-phu

Shang-phu

Kiin-tsui-khou

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Su-kang-miao

Nan-thai-tsui

Si-feng-tcha

Ma-ma-phu

Lung-mên-sou

Ichi-tchêng

Lao-tcha-thun

Yang-thien-phu

Shang-phu

Ning-ki

119° 120° 121° 122° 123° 124° 42° 41° 40°

LIAO-TUNG GULF

MUKDEN or SHÊN-YANG
Fêng-thien Fu or Shêng-king

Tchao-yang
(Gurban-suburgan-holo)

Kuang-ning

Kien-tchang
(Tha-tsü-kou)

KIN-CHOU

Liad-Yang

Ning Yüan

Fu-ning

YUNG-PHING

Lin-yü

Tchang-li

Le-thing

Phing Thsüan
(Pa-kou)

Kai-ping (Kai chou)

Ying kau
Port of Niuchuang

Hai-tcheng

Siu-Yen

Liao-yang

Pen-si hu

Ta-yü Shan

Lang-toŭ-Shan

Thsien-Shan

Ta-hung-lo Shan 2984

Siao-hung-lo Shan 2391

Pi-kia Shan I.

Hu-lu-Tao Promy

Thao-hua Tao I.

Kü-hua Tao I.
(SADDLE I.)

Warren Pt

Sand Pt

Cruzier Shallows

Tower hill

Kai-chou Pt

SADDLE BAY

The Bittern Shallows

Maxwell Pt

HELEN BAY

Glacis Pt

Fort Head

Fu-chow Pt

FU CHOW BAY

Tchang-hing Tao I.

HU LU SHAN BAY

Po-lo Tao I.

Petermann Pt

Thu èrh Tao I.

Round Pt

SOCIETY BAY

Elliot Group

Tchang-shan Tao?

Pa-tcha Tao

Wu mang Tao

Wang-kia Tao

Bourchier Group
(Shi-tcheng Tao)

Ta-lu Tao

KOREAN

Fan-shui Ling Pass

Hun-Ho or Hun-tuo Bira

Liao Ho

Si Liao Ho

Taitsu Ho

Ta ling Ho

Si-sha Ho

Tung-sha Ho

Ta-ling-ho

Suburgan Ho

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Sung-shan

Hing-shan

King Shan

Yi-wu-lü Shan

Thsing-ho-mên

Ta-pai-khi-phu

Pai-thu-tchang-mên

Sin-mun-thun

Ma-san-kia-tsü

Pu-ling

Chao-ling

Fu-shun-tchêng

Sun-ya

Pai-tha-phu

Shi-li-ho

Ma-shi-chou

Yen-thai

Thai-tsü Ho

Tung-king-tchêng

Sha-ling

Liu-êrh-phu-tsü

Pu-kia-tsü

Kie-kuan-phu

Kung-kia-tchêng

Thu Ho

Kan-thsüan-phu

Niu-chuang

Tung-kia-thun

Hai-chou Ho

Si-mu-tchêng

Kuo-chan

Hu-chuang-thien

Yo-chou-tchêng

Yao-kia-tien

Ma-kia-phu

Ta-lang-kou

Sha-tsü-kang

San-li-chai

Khê-pa-ling

Sha-tsü-ho

Yao-ling

Ta-yang Ho

Chê Shan

Tho-kou-tsü

Shê-li-thsun

Wu-tao Ho

Lo-ku Shan

Mo-kui-tsui Shan

Tung-koo-li

Su-kao-tsi

Lung-mên-miao

Cheng-thai-tsü

Ta-lu Tao

Ta-yeu-tcheng

Kan-tsü-ki

Thai-ping-ling

Shui-mên-tsü

Kin-tchang

Ta-she Ho

Pi-tsü-wo

Ta-chuang-ho

Pi-ti Ho

Tu-chuang Ho

Chung-hua-men-tsui

Hiung-yo Shan

Hiung-yo tchêng

Ta-lang-ho

Ta-she-ho

Hung-shui-phu

Shi-ho-phu

Yo-lo-tchêng

Ma-kia-phu

Yao-kia-tien

Kai-chou Ho

Lei-shui Ho

Liang-shui Ho

San Shan

Thsien-wei

Chien-wei

Chien-so

Shan-kai-kuan

Ning-hai

Shi Ho

Yu-kuan

Tang-ho

Nui-thou-yai (Pei-ta-ho)

Yü Ho (Pei-ta Ho)

Liu-shui-ying

Rocky Pt

Shuang-wang

Wang-fu-thai

Yan-kia-tien

Shên-ko-phu

Chung-thsien-tchêng

Thai-thou-ying

Thao-lin-ying

Chu-tsao-yü

Kie-ling-khou

Shi-mên-chai

Kien-tchang-ying

Pai-tao-tsü-phu

Shuang-shan-tsü

Ming-shui-thang-mên

Thsing-ho

Liao-ho-tsü

Liao-ho

Thsi-tsien-fung

Wu-shi-kia-tsü

Pei-kung

San-thai-tsu

Taipuk-gol

Huang-thu-liang-tsü

Yang-shu-kou

Wo-lung-kia

Ying-thu

Ulan-hootsit

Thou-tao-ying-tsü

Pan-ma-kou

Sar-shi-kiu-tsü

Êrh-tao-ying-tsü

Tien-tsü

Abida-baishang

Hura-hoto

Thsung-tcheng

huo-khe Ho

Tha Ho

Hartsin-ying-tsü

Khun-tu-lun Ho

Kuo-liang-kang-tsü

Sirgulin

Hit-pa-pin Ho

Nutchuhun-baishang

Pei-nu-khe-baishang

Ku-kuan-thai-men

Mu-thou-tchêng

Sê-lêng-ta-bu-nang-thsun

Hashatu-baishang

Halha-baishang

Hara-togotu

Yi-hêng-chung

Pai-tha-tsü
(the old Ta-ning-tcheng)

Sung-tsü-ling-mên

Siao-ling Ho

Lung-kua Shan

Kao-khiao

Êrh-thai-tsü

Lien-shan

Thai-tsu-shan

Li-shu-kou-mên

Pai-shi-tsui-mên

Sin-thai-mên

Pai-thu-tchang-mên

Ta-pai-khi-phu

Êrh-tao-tsing

Pan-la-mên

Siao-hei-shan

Chung-an-phu

Êrh-thai-tsü

Tchang-sin-tien

Liu-yang

Sin-tien-tsü

Shi-san-shan

Phan-shan

Kao-phing

Sha-lin-phu

Thien-khiao-tchang

Thien-chuang-thai

Sha-phao-tsü

Êrh-shi-li-phu

San-shi-li-phu

Luan-ku-tchêng

Chao-ti-tien

Phan-thai-tsü

Yung-ti-tien

Lo-lan-phu

Shi-ho-phu

Hung-shui-phu

Yung-ning-tsien

Ssü-phing-kai

Yang-ti-tien

Sha-khou

Ta-chuang-ho

Ta-yeu-tcheng

Kan-tsü-ki

Thai-ping-ling

Kin-tchang

Pi-tsü-wo

Sha-ho-phu

Pai-tha-phu Ho

Shi-li Ho

Shi-li-ho

Sha Ho

Liu-êrh-phu-tsü

A-shan Ho

Pu-kia-tsü

Kie-kuan-phu

Kung-kia-tchêng

Thu Ho

Kan-thsüan-phu

Thien-shui

Lien-shan

Ta-lang-kou

Sha-tsü-kang

Ma-kia-phu

Yao-kia-tien

Kai-chou Pt

Kai-chou Ho

Lei-shui Ho

Hiung-yo tchêng

Hiung-yo Shan

Horinger
Sin-tien
Sha-hu-khou
SO-PING
4370
Thie-shan-phu
Pho-hu-phu
Mie-lu-phu
Chu-ma-phu
Kuan-tang-phu
Yang-kao
Chen-tchuan-phu
Wang-kuan-thun
Yin-kang-phu
Kao-shan-ying
4300
TA-THUNG
Niu-sin-phu
Tso-wei
Yin-si-phu
Ka-chang
Sin-chuang
Yin-shi-phu
Sin-tchu-khou
Wei-yuan-phu
Tso-yün
Hao-kia-phu
Thao-phu
Wei-phing-phu
Phing-lu
Hung-thao Shan
Huang-hua Shan
Ta-yü-khou
An-yin-tsü
Tsing-phing
Ma-yi-hiang
Sa
Té-shen-phu
Ta-shui-khou
Chang-kia-chen
Kuan-wu-khou
Shen-tchi
Yang-fang-ying
6275
Kuang-wu-tchang
NING-WU
3200
Yang-ming-phu
Kuan-tsin Shan
Nao-ni
Tai
Kuo
Yüan-phing
Hu-khou
Tha Ho
Yün-chung Shan
Ting-stang
Hin
Yün-chung Ho
Mu-ma Ho
Hi-chou Shan
Kien Ho
Tsang Shan
Siao-tien-chen
Po-ma Shan
4020
Shi Ling Pass
Tchang-tsin
Huang-tha-chai
Tien-men-kuan
Si-huang-sha
Yü-thsüan Shan
Sin-tien
Han-thoun
Kao-li Shan
THAI-YÜAN
2600
4850
Shi-thie
Thai-yüan
Tsin-sui-chen
Thsing-yuan
Kiao-tcheng
Sü-kou
Thai-ku
Khi
Hung-shan-thoun
Pei-lou-khou
Sin-liu-thun
Ta-shi-khou
Shan-yin
Hia-kai-ko-lu
Ta-yue-khou
Mu-lun-khou Shan
Man-thou Shan
Hu-cho Ho
Fan-tchi
O-khou
Yen-tö
Shi-tsü-tang
Suü-tsi-wo-ling
9130
Wu-thai-shan
12,000
11000
Wu-thai
Yang-tchang-ying
Yen-men-kuan
Ta-tsui-khou
Ta-tha Shan
Pa-fu Ling
Ma-ling-kuan
Ma-fang-chen
Ho-shuin
Shi-tsü
An-tsu-Ling Pass
Lung-thsüan-kuan
Fou-phing
Wang-liu-khou
Wang-khuai-chen
Yang-kia-chuang
Khü-yang
Wang-thing-tai
Hei-shan-kuan
Tcha-thoa-khou
Hing-thang
Phing-shan
Yü
Sü-shui Ho
Tsing-hing Shan
Yü-thsüan Shan
Phing Ting
2880
Po-tsing
Po-Tchuan
Ho-thao-yüan
Ku-kuan
Tsing-hing
Shui-yang
4450
Shi-pa-tsai
Thao Ho
Wo-hu Shan
Shi-ma Shan
So-huang-thoun
Chao Ho
Peng Shan
Lung Shan
Lê-phing
Tsan-huang
Kao-yi
Po-hiang
Lin-tcheng
Chang-thsan-phu
Nei-khiu
Ho-shuin
Ming-shan
Sung-tsi-ling-kuan
Thang-shan
Nan-kung
Lung-phing
Yang-thung
Ye Ho
Si-phing Shan
Huo-lu
CHÊNG-TING
Kao-tchêng
Ye-ho-pha
Luan-tchêng
Sin-chai-tien
Yüan-shi
Chao
Tu-shi-khiao
Sha-ho-tien
Nan-tsin
Po-Han-thsun
Sin-ho
Ki
Tsao-khiang
Ku-tchêng
Thien-thsun-phu
Tê
Ling
Shang-ho
Tsing-hai
Wen-an
Mo-chou
Hsiang-tcheng-phu
Tsü-yu-chen
Liu-tiao-thai
Ma-tchang
Ta-tcheng
Jen-khiu
Thsing
Li-than-chen
Hsing-tsi
Thsang
Kien Ho
Nan-phi
Kiao-ho
Tung-kuang
Fou-tchêng
Wu-khiang
Wu-yi
Hsing-shui
King
Wu-khiao
Ning-tsin
Pao-thun-tien
Tê-phing
Ma-kia Ho
Yang-fang
Lê-ling
Ho-kien
Tsao-khiang
Pao-ting
Wang-kia-khou
Ku-tcheng
Tsing-liu-shu
Ling
Nan-kung
Thang-shan
Nei-khiu
Lung-phing
Chang-thsan-phu
Yang-thung
Ye Ho
Ho-shuin
Ma-fang-chen
Ma-ling-kuan
Pa-fu Ling
Sung-tsi-ling-kuan
Ming-shan
Si-phing Shan
Ye Ho
Thao Ho
Wo-hu Shan
Shi-ma Shan
Peng Shan
Lung Shan
Chao Ho
Kiao Ho
Hu-cho Ho
Shui-yang
Thai-yüan
Kao-li Shan
Yü-thsu
Ta-tha Shan
Sü-kou
Thai-ku
Khi
Kiao-tcheng
Thsing-yuan
Tsin-sui-chen
Pei-lou-chen
Khai-tu-chen
Ku-ling-chen
Pu-kai-chen
Hung-shan-thoun
Han-thoun
Sin-tien
Thai-an
Shi-thie
Hiang-lu
Tsing-ki
Ma-yi-hiang
Ta-yue-khou
Mu-lun-khou Shan
Man-thou Shan
Hu-cho Ho
Fan-tchi
Yang-fang-ying
Yen-men-kuan
Ta-tsui-khou
Kuang-wu-tchang
Shi-tsü-tang
Yen-tö
Suü-tsi-wo-ling
Wu-thai-shan
Lung-thsüan-kuan
An-tsu-Ling Pass
Fou-phing
Wang-liu-khou
Wang-khuai-chen
Yang-kia-chuang
Khü-yang
Wang-thing-tai
Hei-shan-kuan
Tcha-thoa-khou
Hing-thang
Phing-shan
Yü
Sü-shui Ho
Tsing-hing Shan
Yü-thsüan Shan
Phing Ting
Po-tsing
Po-Tchuan
Ho-thao-yüan
Ku-kuan
Tsing-hing
Shui-yang

SUAN-HUA
Yang Ho
Yen-jan Shan
Ta-hai-tho Shan
Yen-Khing
Pao-an
1670
Huai-lai
Huai-jou
Tchang-Phing
Ming tombs
Fan-shan plu
Nan-khou
Hong-ling-tcheng
Yang-fang
Sha-ho
Nin-lan-shan
Shun-yi
Yung-ting
Miao-feng Shan
4275
Yen-kiu-tcheng
Chai-tsang
M. Pei-ting
9500
M. Thsing-shui tsien
Po-hua Shan
6820
Chao-kia-feng
Ta-lung-men
Tchen-kia-thai
Liang-hiang
Fang-shan
Shi-tsu
Chuny-fung
Cho
Erh-shi-li-pu
Sang-kan-tien
Lai-shui
Yi
Ting-ling
Sin-tcheng
Sin-khiou
Pei-ho-tien
Ku-tcheng-tien
Man-tchêng
An-su
Thao-ho-tien
PAO-TING
Wan
Hing-yang
Kiu-sien Ho
Kao-yang
Thsing-feng-tien
Thao-khii-tien
Ka-tcheng
Po-ye
Yang-tsun
Khi
Nan-kuan
An-phing
Shen-tsê
Tsin
Shên
Wu-khiang
Shu-lu
Tchên-êrh-chang
Hêng-shui
Sin-ho
Ki
Tsao-khiang
Wu-yi
Liu-chang-phu
King
Pei-liu-chi
Nan-liu-chi
Ho-kien
Jen-khiu
Shi-men-khiao
Li-kia-khou
Erh-shi-li-phu
Su-ning
Wang-kia-phu
Tsing-kia-khiao
Hien
Siao-tê-phu
Siao-ying
Fu-chang
Kiao-ho
Shun-kia-khiao
Po-thou
Chuan-ho
Sie-kia-wo
Nan-phi
Tung-kuang
Fou-tchêng
Kien-khiao-chên
Lien-wo-chên
Man-ho-chên
An-ling
Wu-khiu
Pao-thun-tien
Ning-tsin
Yang-fang
Lao-tsang Ho
Grand Canal
Yu Ho
Tsu Ho
Tsing Ho
Thsang
Hsing-tsi
Li-thsun
Mu-chu Ho
Thsing
Li-than-chên
Mu-tchang
Liu-ho
Hou-kia-chang
Mu-phêng-khou
Liu-tiao-thai
Chi Ho
Wen-an
Mo-chou
Hiang-tcheng-phu
Tsui-ya-chên
Ta-tcheng
Ku-yang Ho
Yi Ho
Pei-thang
Tsing-liu-thsun
Tsing-hai
Paoting
Wang-kia-khou
Pai-kou-tien
Si-Tien
Chao-pai-khou
Sin-an-tien
Li-si
Sheng-fang
Su-khiao
Pa
Li-San-kiu-Tien or Tung-Tien
Khang-kia-ma-thou
Pai-kou-tien
Tchên-kia-pa
Tientsin
Tsui-chai-lin
Yang-kia-chuang
Ta-Pe
Ta-ku
Sin-tcheng
Kê-tin
Hien-shui-ku
Liang-wang-chuang
Sha-lei-thien Banks
Sha-lei thien
GULF OF PE-CHILI
(PO-HAI)
Yellow or Huang Ho River
Old Yellow River
Yen-shan
Shan-hai-kuan
Khing-yun
Kiu-hien
Pan-ta-ying
Hai-fêng
Chan-hua
Yang-sin
Li-tsin
Lê-ling
Liu-po-mi
Yang-fang
Lao-ye-miao
Miao-shêng-phu
Thien-men-tsun
Yen-wo
Sang-lo-thsun
Khan-têng
Ho-liu-chuang
Shên-thang
Tchang-cha-khou
Ta-thsing-ho
Lao Ho
Thsing Ho
Ki-tho
Feng-thai
Thang Shan
Ning-ho
Thang-fang
Phan-kia-chuang
L. Thsi-li Hai
Liu-thai
Han-tai
Kien-ho-chuang
Ho-liu-chuang
Thsi-li-pu
Sang-kan-tien
Ta-king-kuan
Liu-li-ho
Thsai-yu-chên
An-phing
Phung-ke-chuang
Ma-thou
Ho-si-wu
Lung-fang
Wu-thsing
Lo-ta
Thsai-thsun
Fung-an
Hauny-kia-tien
Yang-thsun
Yung-thsing
Thsui-kou
Li-kia-khou
Pei-ho-tien
Sin-khiou
Khang-kia-ma-thou
Pai-kou-tien
Tchên-kia-pa
Shêng-fang
Su-khiao
Li-San-kiu-Tien or Tung-Tien
Pa
Tientsin
Tsui-chai-lin
Pei-thang
Yang-kia-chuang
Tang-liu
Ta-ku
Sin-tcheng
Kê-tin
Hien-shui-ku
Liang-wang-chuang
Sha-lei-thien Banks
Sha-lei thien
Ta-Pe
Tsing-liu-thsun
Ho-liu-chuang
Shên-thang
Tchang-cha-khou
Ta-thsing-ho
Ma-thou-ying

LIAO-TUNG GULF

Kao khiao
Erh thai tsŭ
Pi-kia Shan I.
Li shu kou mên
Pai shi tsui mên
Hu-lu-Tao Prom.
Thai tsu shan
Ning Yüan
Kan kou 1180
WILLOW PALIS
Ning Yüan Ho
Sha ho so tchêng
Thao-hua Tao I.
Kü-hua Tao I. (SADDLE I.)
Warren Pt
Ming shui thang mên
Shuang shan tsŭ
Liang shui Ho
San Shan
San li khiao
Liu chou Ho
Chung hou so
E kia fên
Sand Pt
Cruzier Shallows
Pai tao tsŭ phu
Chu tsao ying
Kie ling khou
Kien tchang ying
Shi mên chai
Thsien wei
Chien wei
Thao lin ying
Thai thou ying
Chung thsien sz tchêng
Chien so
Shan hai kuan
Lin yü
Fan kia tien
Ning hai
Shi Ho
Shên ko phu
Wang fu thai
Fu-ning
Yu kuan
Tang-ho
Shuang wang
YUNG-PHING
Wu thou yai (Pei ta ho)
Rocky Pt
Yü Ho (Pei-ta Ho)
Liu shui ying
Tchang-li
Phu-ho
An shan Ho or Shu Ho
Thuan lin
Thao li chuang
L. Thsi li
Hua pao thun
Le-thing
Yang lan tha
Ma thou ying
Ta thsing ho
Liao Ho
Tsing-hing Ho or Ku-tsin
Tu-shan
Kuo khan
Si mu tchêng
Yang kau Port of Niuchuang
Hu chuang thien
Liang thou chai
Thung yuan phu
Ma kia phu
Ta lang kou
Sha tsŭ kang
Yo chou tchêng
Yao kia tien
Kai-chou Pt
Kai ping (Kai chou)
Kai chou Ho
Tower hill
Leng shui Ho
Hiung yo tchêng
Hiung-yo Shan
San li chai
Khê pa ling
Sha tsŭ ho
Yao ling
Siu-Yen
Chê Shan
Ta yang Ho
Tho kou tsŭ
Shê li thsun
Wu tao Ho
Tu chuang Ho
Chang tien Ho
Siao yang Ho
Lo-ku Shan
Mo-kui Shan
Ta ku shan
Lung mên miao
Cheng thai tsŭ
Tung koo li
Si ko ti
Ta lu Tao
Ta chuang ho
Ta yeu tchang
Wang kia Tao
Bourchier Group (Shi-tcheng Tao)
KOREAN
SADDLE BAY
The Bittern Shallows
Maxwell Pt
HELEN BAY
Ai kuan thun
Liao kia khou
Pi-ti Ho
Sha khan
Glacis Pt
Yung ning tsien
Ssŭ puang kai
Yang ti tien
Fort Head
Fu-chow Pt
FU CHOW BAY
Fu
Erh shi li phu
San shi li phu
Sha phao tsŭ
Shui mên tsŭ
Fu chow Ho
Tchang hing Tao I.
Luan ku tchêng
Thai ping ling
Kan tsŭ ki
Chao ti tien
HU LU SHAN BAY
Phao thai tsŭ
Yung ti tien
Kin tchang
Po lo Tao I.
Wu ho shui
Petermann Pt
Po lan phu
Pi tsŭ wo
Thu èrh Tao
Round Pt
Shi ho phu
Hung shui phu
SOCIETY BAY
Elliot Group
Tchang shan Tao?
Wu mang Tao
Pa tcha Tao
KIN-CHOW BAY
Kin-chow
Ta hei Shan
Kuang lu Tao
Tha lien Tao
Blonde Is
Hai yang Tao
Tchang tsŭ Tao or S. Blonde I.
Wedge Head
Thung shu khou
Mu tchang phu
Lao shu thun
KERR BAY
TA LIEN WAN BAY
Thie-Shan or Iron I.
C. Collinson
Shuang thou
Siao ping thou
San chan Tao
Yang thou wo
Liu shun tchêng
PORT ARTHUR OR LU-SHUN-KHOU
Lao thie Shan Prom.
LAO-THIE-SHAN CHANNEL
Miao Tao Is.
N. Huang tchêng Tao
S. Huang tchêng Tao
Ta khin Tao
Tho ki Tao
Kao shan Tao
Hou ki Tao
Ta chu Tao
Ta hei shan Tao
Tchang shan Tao
Miao Tao
MIAO-TAO-STRAIT
Sang Tao
TENG-CHOW
Wu shi li phu
Sloping Pt
Mu kia tao Prom.
Kii Shan
Thai shi li phu
OF PE-CHILI
(PO-HAI)
Yellow River or Huang Ho
40°
39°
38°
XUM

37°
36°
35°
Yü-thsü
Kiao-tchêng
Sü-kou
Ta-tha Shan
Thai-ku
Khi
Phing-yao
Chang-lan-chen
Yü-shê
Liao
SHUN-TÊ
Nan-ho
Jên
Kü-lu
Nan-kung
Nei-khiu
Thang-shan
Lung-phing
Po-hiang
Lin-tchêng
Kao-yi
Tsan-huang
Ningtsin
Sin-ho
Tsao-khiang
Ki
Heng-shui
Ku-tchêng
Tê
Wu-tchêng
Phing-yüan
Lin-yi
Ling
Ma kia Ho
Kuang-tsung
Thsing-ho
Hia-tsin
Lin-Thsing
Kao-Thang
Yü-tchêng
Wu-hiang
Thsin
Thsin-yüan
Hua Shan
Tiao-tchao Shan
Siang-yüan
Li-tchêng
Lu-tchêng
LU-AN
Chang-tsu
Hu-kuan
Yo-yang
Thun-liu
Wu-an
KUANG-PING
Khü-chou
Khiu
Han-tang
Fei-hiang
Sin-chai-chên
Kuan-thao
Thang-yi
Kuan
TUNG-TCHANG
Ma-khiao
Po-phing
Jên-ping
Tchang-thsing
Thsing-phing
Thsi-ho
TSI-N
Tchêng-an
Kuang-phing
Ho-sha-phu
Thai-tchêng-phu
Tu-thsun-tien
Phêng-tchêng-chên
Ta-tchêng-chên
Niu-lu-thsun
Chang Ho
Thsü
Lin-chang
TA-MING
Chêng-kia-chuang
Wei-hien
Tung-hân-phu
Huang-kin-tu-phu
Sü-tien-thsun
Shê
Thsing-tien
Yüan-khü-thsun
Hu-khou-kuan
Thsing Ho
Chang Ho
Tchang-thsun-chên
Tchang-lung-chên
Wei-chai-chên
An-tchang-chên
Pao-tien-chên
Kao-ho-chên
Kao-pi-thsun
Phing-shui
Lin
CHANG-TÊ
Wei-kia-ying
Yüan Ho
Fêng-lê-chên
Shui-chi-chên
Hui-lung-chên
Ku-thsun
Nan-lê
Nan-thsing-tien
Chang-thsiu-chên
Yang-ku
Shên
Yang-ku-tien
Tung-e
Fei-tchêng
Phing-yin
Yü Shan
Ê-tchêng
Yu-li-miao
Tai-kia-miao
Kuan-tchêng
Fan
Shou-chang
Thsing-fêng
Nei-huang
Thang-yin
Yi-kou
Yu-ho-phu
Thang Ho
Kuo-ti-chên
Hou-êrh-chuang
Kuan-ti-miao
Tsing-tien-phu
Xi-tha-miao
Pu
Khai
Yün-tchêng
Tung-Phing
Wên-shang
Ning-yang
Tomb of Confucius
YEN-CHOU
Tsi-Ning
Kia-siang
Kü-ye
Nan wu Shan
THSAU-CHOU
Tung-ming
Ting-thao
Kin-hiang
Yü-thai
Tchêng-wu
Shan
Thsao
Lan-yi
KHAI-FÊNG
(Pien-tchêng)
Khao-tchêng
Yü-tchêng
Tchen-liu
Chung-mou
Cheng
Yung-tsê
Yung-yang
Kung
Ssü-shui
Meng
Meng-tsin
Mang Shan
HO-NAN
Sin-an
Yen-shi
Ta-chou Shan
Yü thsai Shan
8000 ft.
HUAI-KHING
Wu-chi
Tsi-yüan
Wu-chi Shan
425 f.
Wên
Yüan-wu
Yang-wu
Fêng-khiu
Yen-tsin
Thsi-yi
Tchen-khiao-chên
Lung-mên-khou
Liu-yüan-khou
Yang-khiao
Ho-yin
Po-sha-chên
Han-chuang
Shi-pu-li-phu
Chu-sien-chên
Huan-thou
Han-kang
Pei-sha Ho
Ho-yai
Old course of the Yellow River before
Shun-ti Ho
Phei
Fêng
Hua-shan-tsi
Ku-kia-khou
Tang-shan
Yellow River
Wan-fu Ho
Nan-yang-cha
Lake
Sü-kia
Chao-yang
Sin-khou Ho
Kiu-yün Ho
Ta-wên
Tien-thai
Tchang-
Kuan-chuang
Chang-hia
Ku-shan
Tchao-mi-tien
Tu-kia-miao
Yen-tchêng
Thsing-shui-phu
Liu-lin
Tai-kia-wan
Wei-kia-wan
Sin-tien
Lien-thsun
Tchang-kia-chuang
Yü-tchêng
Li-ki-chai
Liu-pei-chan
Yao-chan
Ta-fang-chên
Ta-khuu
Nin-ki-tien
Hiama-ying
Khii-lu
Khu-shui-phu
Chêng-kia-khou
Sü-liu-shu
Thsing-ho
Ta-chai-phu
Wei
Ki-tsê
Phing-hiang
Sha-ho
Khi-yang-chên
Tha-lien-tien
Khü-mo-tsi
Lung-thang-chên
Lin-ming-kuan
Kie-ho-tien
Phei-hui-chên
Wu-an
Thung-yü-chên
Liuo-tchêng-thsun
Phan-lung-thsun
Kiao-khou-chên
Mien-shung-chên
Hun-than-thsun
Huang-tse-kuan
Khi-yang-chên
Ho-ho-chên
Shi-tsü-ying
Siu-wu
Sin-hiang
Lung-wang-miao
Tha-êrh-phu
Liu-kuang-tsi
Chu-lin-tsi
Tu-shêng-ying
Ma-kia-tsi
Pai-hua Ho
Yen-kai
Shên-phêng
Fou-kan-tsi
Liu-kia-tsi
Chao-kia-chuang
Tchêng-wu
Huo-kia
Siao-ki-tsi
Yang-tchêng
Thien-tsing-kuan
Hu-tse
Lan-tchê-chên
In-fêng-thsun
Ning-kuo
Thsing-yuan-chên
Shao-yuan-chen
Shi-thsun
Wang-wu Shan
Wang-wu-chai
Kao-phing-tsi
Sü-ma-tsi
Chang-wu-tien
Tsü-an-tsi
Khi-mên
Sin-chên
Hua
Sün
Tao-khou
Khi
Wu-tsin
Hui
WEI-HUI
Khai
Pu
Yellow River
Chao-wang Ho
Ho-ho-chên
Shi-tsü-ying
Mu-luan-tien
Thain
Khang-thsun
Wang-lu-tien
Tchen-khiao-chên
Yang-khiao
Liu-yüan-khou
Lung-mên-khou
Yi-feng
Tchêng-wu
Shan
Fou-kan-tsi
Liu-kia-tsi

Shên
Kiao-ho
Wu-khiang
Shu-lu
Tung-kuang
Khing-yun
Fou-tchêng
Wu-yi
Hai-fêng
Chan-hua
Lê-ling
Heng-shui
King
Wu-khiao
Ning-tsin
Yang-sin
Li-tsin
Sin-ho
Ki
Tsao-khiang
Tê-ping
WU-TING
Pin
Tê
Ku-tchêng
Ling
Shang-ho
Phu-thai
Nan-kung
Lin-yi
Phing-yuan
Thsing-tchêng
Kü-lu
Wu-tchêng
En
Po-hing
Thsi-tung
Kuang-tsung
Thsing-ho
Kao-yuan
Lê-an
Hia-tsin
Yü-tchêng
Tsi-yang
Sin-tcheng
Shou-kuang
Lin-Thsing
Kao-Thang
Tsou-ping
Tchang-shan
Lin-tsù
Tchang-yi
Chang-khiu
Phing Tu
Khiu
Thsi-ho
TSI-NAN
Tsu-tchuan
Tchang-lê
Wei
Kuan-thao
Thsing-phing
THSING-CHOU
Jên-phing
Po-shan
Po-phing
Tchang-thsing
Thang-yi
Lin-khü
Kuan
TUNG-TCHANG
Ping-yin
Fei-tchêng
Tung-e
THAI-AN
710 f.
Lai-wu
Yü Shan
Shên
Yang-ku
Nan-lê
Khi Shan
Li Shan
Tai Sh.
Thai Sh.
Yüan Sh.
Tchang-tchêng
Kuan-tchêng
Fan
Shou-chang
Tung-Phing
Thsing-yêng
Pu
Wen-shang
Ning-yang
Yun-tchêng
Khai
Khü-fou
Ssü-shui
YEN-CHOU
Kia-siang
Tsi-Ning
Ku-ye
Tsou
Yi Shan
THSAU-CHOU
Nan wu Shan
Thêng
Chung-ting Shan
Fei (Pi)
Kin-hiang
Ting-thao
Yü-thai
YI-CHOU
Tchêng-wu
Shan
Thsao
Hia-chên
Lin-tchêng
Yi
Meng-yin
To-chuang
Kui
Ji-chao
Chaili-ho
Tower Pt
Sin-tien
Hia-yuan
Pei-khe-tsi
An-tung-wei
Flat I.
Ché-wang
Liang-wang-miao
Kan-yü
Tsingkhou
Chu-tchêng
Yung-fu Shan
Yi-shui
Süe Shan
Ki-wu Shan
Mu-ling-kuan
Ma-chan
Shang-ye Shan
Tolosan I.
Lang-ye thai I.
AN-KIA-KHOU BAY
Kung-ning
Liang-tchêng-tsi
Liang-kiang
Kuan-shu
Shi-khiao
Ku-chêng
Hia-ho-so
Ta-pho-thu-rh
Thou-ying-tsü
Fou-shan-so
Shi-liang-chuang
Ling-shan-wei
Tiao-thsun
Kiao
An-khiu
Kao-mi
Po-mai Lake
Wang-kap Shan
Kiang-chi-chen
Siang-tchuan-tsi
Siao-kuan-tien
Lung-sin-phu
Yung-fu Shan
Ma-ssü
Ying-khia-tchêng
Tchi-kien-tien
Nan-liu-chin
Tsü Ho
Thsing-chou
Lai-chou Bank
LAI-CHOW BIGHT
LAI-CHOW
Lai Mts.
Fu-yung Tao
Mu-ki-tao Promy (CHIMATAU)
Sang Tao
Ta hei shan Tao
Yellow River
Huang Ho
Lao Ho
Ma kia Ho
Thu-hie Ho
Sha Ho
Siao thsing Ho
Wen Ho
Ke ma Shan
Yü Shan
Ssü Ho
Yi Ho
Fang Ho
Phan lung Ho
Shun-ti Ho
Wan-fu Ho
Pai-hua Ho
Kiu-yün Ho
Sin-khou Ho
Ssu Ho
Tchang Sh.
Yao Sh.
Thien ma Sh.
Phei-wei Sh.
Kiu nü Shan
Thsüan ku Shan
Li Shan
Ki Shan
Shi mên Shan
Wang-kap Shan
Yi Shan
Yi Ho
Shu Ho
Kiao Ho
Siao-ku Ho
Ta-tsu Ho
Yeo-shi Ho
Po-shu Ho
Liu-kia-chi
Khê-lü-tien
Tsi
Nan-ku-kh
Lao-S
Pi-kia S
Khio-S
Huang-shan-kuan
Phing-li-tien
Hai-shen-miao
Shi-li-phu
Hai-thsung-chou
Hui-pu
Huang-sheng-thuan
Sin-ho-khiao
Wang-nou-tien
Han-thing
Liu-han-kiao
Ku-ti-tsi
Po-tang Ho
Ta-tsi Ho
Mi Ho
Yü Ho
Liu-tsi Ho
Thsing-shui
Kuan-thai
Mu-chu-kou
Thang-thou-chai
Hia-ying
Sha-ho
M. Huang
Yun Shan
Ti Ku
Thsan khiao
Phêng-kia-tsui
Mi Ho
Siao-thsing Ho
Po-hing Ho
Thsing-ho-chên
An-ting-chên
Po-wang-wan Rapids
Nie-su-chên
Thsing-ho-chên
Sui-tchu-khou
Khin-têng
Sung-lo-thsun
Liu-po-mi
Yang-fang
Pan-ta-ying
Kiu-hien
Wang-shu-pu
Thsui-kia-khou-chên
Kiu-tchang-chên
Miao-shêng-phu
Lao-ye-miao
Thie-men-tan-pu
Yen-mo
Ning-hai-thsun
Lung-thau
Huang-shan-kuan
Khio-S
Chu Khiao
Phing-li-tien
Hai-shen-miao
Shi-li-phu
Hai-thsung-chou
Hui-pu
Huang-sheng-thuan
Sha-ho
M. Huang
Yun Shan
Ti Ku
Hia-ying
Kuan-thai
L. Thsing-shui
Mi Ho
Thsan khiao
Phêng-kia-tsui
Mu-chu-kou
Thang-thou-chai
Hu-thou-yen
Lai-chou Bank
Fu-yung Tao
LAI-CHOW BIGHT
LAI-CHOW
Lai Mts.
Mu-ki-tao Promy (CHIMATAU)
Sang Tao
Ta hei shan Tao
Yellow River
Huang Ho
Lao Ho
Ma kia Ho
Thu-hie Ho
Sha Ho
Siao thsing Ho
Wen Ho
Ke ma Shan
Yü Shan
Ssü Ho
Yi Ho
Fang Ho
Phan lung Ho
Shun-ti Ho
Wan-fu Ho
Pai-hua Ho
Kiu-yün Ho
Sin-khou Ho
Ssu Ho
Tchang Sh.
Yao Sh.
Thien ma Sh.
Phei-wei Sh.
Kiu nü Shan
Thsüan ku Shan
Li Shan
Ki Shan
Shi mên Shan
Wang-kap Shan
Yi Shan
Yi Ho
Shu Ho
Kiao Ho
Siao-ku Ho
Ta-tsu Ho
Yeo-shi Ho
Po-shu Ho
Liu-kia-chi
Khê-lü-tien
Tsi
Nan-ku-kh
Lao-S
Pi-kia S
Khio-S
Huang-shan-kuan

MAP
OF
NORTH EASTERN CHINA

PREPARED IN THE

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,
MILITARY INFORMATION DIVISION,

WASHINGTON, U.S.A.

1900.

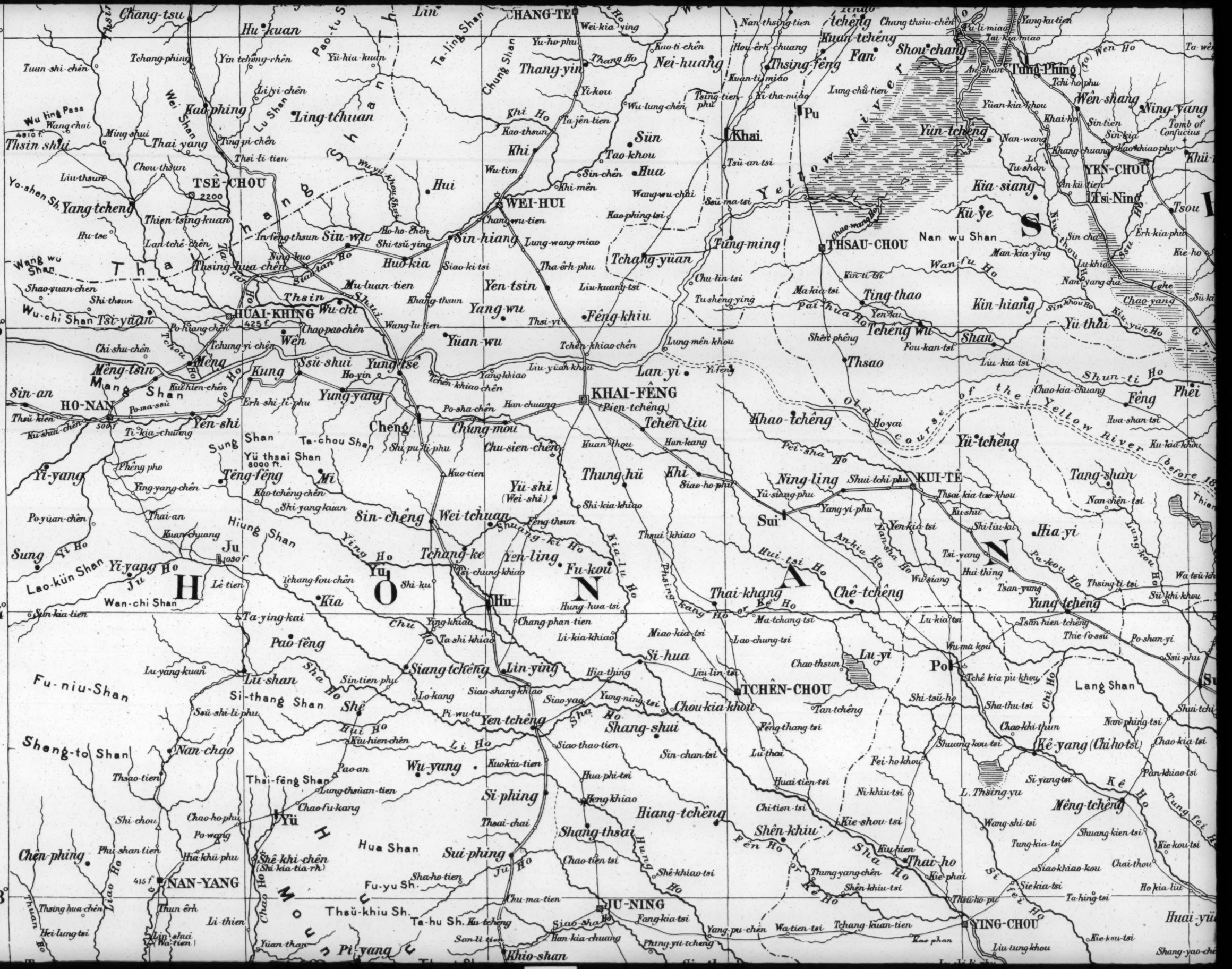
SCALE

10 0 10 20 30 40 50 MILES.

CONVENTIONAL SIGNS.

- Boundary of Provinces.
- Boundary of Mongol clans or banners.
- Fu – Capital of Province.
- Fu – Prefectural City, or City of 1st order.
- Chi-li-Chou or simply Chou – Independent Department City, or City of 2nd order.
- Chou – Department City, or City of 2nd order.
- Hien – District City, or City of
- Yi – Post-town.
- Small Town, Village.
- Imperial Tombs.
- Mountain Pass.
- Main Roads.
- Smaller Roads.
- Rail Roads.
- Rail Roads Projected.
- Great Wall.
- Place where a river becomes navigable for larger boats.
- Place where a river becomes

38
37°
36
35°


36°
35°
34°
33°
Chang-tsu
Hu-kuan
CHANG-TE
Wei-kia-ying
Nan-tsing-tien
Tchao-tchêng
Chang-thsiu-chên
Yang-ku-tien
Kuan-tchêng
Fan
Shou-chang
Tung-Phing
Tchang-phing
Yin-tchêng-chên
Yü-hia-kuan
Yü-ho-phu
Thang Ho
Nei-huang
Hou-êrh-chuang
Thsing-fêng
An-shan
Tchi-ho-phu
Wen-shang
Ning-yang
Tuun-shi-chên
Li-yi-chên
Kuan-ti-miao
Tsing-tien-phu
Yi-kou
Wu-lung-chên
Lung-chü-tien
Yüan-kia-khou
Wu ling Pass
4910 f.
Wang-chai
Ming-shui
Kai-phing
Ling-tchuan
Khi Ho
Ta-jên-tien
Pu
Khai
Yün-tchêng
Nan-wang
Khai-ho
Sin-tien
Sin-kia
Tomb of Confucius
Thsin-shui
Thai-yang
Tung-yi-chên
Thsi-li-tien
Kao-thsun
Sün
Khi
Tao-khou
Tsü-an-tsi
Khang-chuang
Chao-khiao-phu
Chou-thsun
Liu-thsun
TSÊ-CHOU
2200
Wu-tsin
Sin-chên
Hua
YEN-CHOU
Yo-shen Sh.
Yang-tchêng
Hui
Khi-mên
WEI-HUI
Wang-wu-chai
Sou-ma-tsi
Kia-siang
Tsi-Ning
Thien-tsing-kuan
Chang-wu-tien
Kao-phing-tsi
Kü-ye
Hu-tse
Lan-tché-chên
In-fêng-thsun
Siu-wu
Ho-ho-chên
Shi-tsü-ying
Sin-hiang
Lung-wang-miao
Tung-ming
THSAU-CHOU
Nan wu Shan
Sin-cha
Erh-kia-phu
Wang wu Shan
Ning-kuo
Thsing-hua-chên
Hui-kia
Siao-ki-tsi
Tha-êrh-phu
Tchang-yüan
Man-kia-ying
Kie-ho
Shao-yuan-chen
Mu-luan-tien
Yen-tsin
Chu-lin-tsi
Kin-li-tsi
Lu-khiao
Nan-yang-cha
Lohe
Shi-thsun
Thsin Wu-cht
Khang-thsun
Liu-kuang-tsi
Ma-kia-tsi
Ting-thao
Kin-hiang
Wu-chi Shan
Tsi-yuan
HUAI-KHING
425 f.
Yang-wu
Fêng-khiu
Tu-shêng-ying
Pai-hua Ho
Yen-kai
Tchêng-wu
Yü-thai
Po-huang-chên
Chao-pao-chên
Thsi-yi
Kin-khou Ho
Kiu-yün Ho
Wen
Yüan-wu
Shên-phêng
Shan
Chi-shu-chên
Tchung-yi-chên
Tchen-khiao-chên
Lung-mên-khou
Fou-kan-tsi
Meng
Meng-tsin
Kung
Ssü-shui
Yung-tsé
Liu-yi-kan-khou
Lan-yi
Yi-fêng
Thsao
Liu-kia-tsi
Shun-ti Ho
Sin-an
Mang Shan
Ho Ho
Ho-yin
Yang-khiao
Tchen-khiao-chên
Kiu-hien-chên
Chao-kia-chuang
Phei
HO-NAN
Erh-shi-li-phu
KHAI-FÊNG
Pien-tchêng
Old course of the Yellow River before 1887
Po-ma-ssü
Yung-yang
Po-sha-chên
Han-chuang
Thsü-kien
Yen-shi
Cheng
Chung-mou
Tchen-liu
Khao-tchêng
Ho-yai
Ku-shui-chên
300 f.
Ti-kia-chuang
Sung Shan
Ta-chou Shan
Yü thsai Shan
8000 ft.
Shi-pu-li-phu
Chu-sien-chên
Yü-tchêng
Pei-sha Ho
Yi-yang
Têng-fêng
Mi
Yü-shi
(Wei-shi)
Thung-hü
Khi
Ning-ling
Shui-tchi-phu
KUI-TÊ
Tang-shan
Phêng-pho
Kho-tchêng-chên
Shi-kia-khiao
Siao-ho-phu
Yü-siang-phu
Thsai-kia-tao-khou
Nan-chên-tsi
Ying-yang-chên
Shi-yang-kuan
Sin-chêng
Wei-tchuan
Shuang-ki-Ho
Thsing-thsun
Sui
Yang-yi-phu
Ku-shu
Hia-yi
Po-yüan-chên
Thai-an
Kuan-chuang
Hiung Shan
Ju
Tchang-ke
Yen-ling
Fu-kou
Thsui-khiao
Yen-kia-tsi
Shi-liu-kai
Sung
Yi Ho
Ying Ho
Yü
Kia-lu Ho
Thsing-kang Ho
Tsi-yang
Hui-tsi Ho
An-kia Ho
Tan-sha Ho
Pa-kou Ho
Lung-kou Ho
Lao-kün Shan
Yi-yang Ho
1030 f.
Tsi-chung-khiao
Hui-thing
Wu-siang
Thsing-ti-tsi
Wa-tsü-khou
Wan-chi Shan
Lê-tien
Tchang-fou-chên
Kia
Shi-ku
Hu
Hung-hua-tsi
Thai-khang
Ke Ho or
Chê-tchêng
Tsan-yang
Yung-tchêng
Sü-khi-khou
Sün-kia-tien
Ta-ying-kai
Chu Ho
Ying-khiao
Chang-phan-tien
Ma-tchang-tsi
Lu-kia-tsi
Tsan-tien-tchêng
Thie-fo-ssü
Po-shan-yi
Pao-fêng
Ta-shi-khiao
Li-kia-khiao
Miao-kia-tsi
Lao-chung-tsi
Si-hua
Wu-ma-kou
Lu-yang-kuan
Lu-shan
Sha Ho
Siang-tchêng
Lin-ying
Hia-thing
Chao-thsun
Lu-yi
Po
Ssü-phu
Fu-niu-Shan
Sin-tien-phu
Siao-shang-khiao
Liu-lin-tsi
TCHÊN-CHOU
Tchê-kia-piu-khou
Lang Shan
Si-thang Shan
Shê
Lo-kang
Siao-yao
Yung-ning-tsi
Chou-kia-khou
Shi-tsü-ho
Chi Ho
Ssü-shi-li-phu
Pi-wu-tu
Yen-tchêng
Sha Ho
Shang-shui
Tan-tchêng
Sha-thu-tsi
Shui-tchi
Hui Ho
Kiu-hien-chên
Li Ho
Féng-thang-tsi
Chao-khi-thun
Nan-phing-tsi
Sheng-to Shan
Nan-chao
Siao-thao-tien
Sin-chan-tsi
Lu-thsi
Shuang-kou-tsi
Kê-yang (Chi-ho-tsi)
Chao-kia-tsi
Thsao-tien
Pao-an
Wu-yang
Kuo-kia-tien
Fei-ho-khou
Pan-khiao-tsi
Thsi-fêng Shan
Si-yang-tsi
Kê Ho
Lung-thsüan-tien
Si-phing
Hua-phi-tsi
Huai-tien-tsi
Ni-khiu-tsi
L. Thsing-yu
Tung-fei Ho
Chao-fu-kang
Heng-khiao
Hiang-tchêng
Chi-tien-tsi
Mêng-tchêng
Shi-chou
Chao-ho-phu
Yü
Thsai-chai
Shang-thsai
Kie-shou-tsi
Wang-shi-tsi
Po-wang
Shên-khiu
Pên Ho or Ke Ho
Shuang-kien-tsi
Chên-phing
Phu-shan-tien
Hua Shan
Sui-phing
Hung Ho
Tung-kia-tsi
Kie-kou-tsi
Shê-khi-chên
(Shi-kia-tia-rh)
Chao-tien-tsi
Kiu-tien
Thai-ho
Shê-khiao-tsi
Chai-thou
Liao Ho
Sha-ho-tien
Tung-yang-chên
Kie-phai
Siao-khiao-kou
Si Ho
Fu-yu Sh.
Shên-khiu-tsi
Ho-kia-liu
Chao Ho
Chu-ma-tien
Thsü-ho-pu
Sie-kia-tsi
Ta-hing-tsi
Thsing-hua-chên
Thsü-khiu Sh.
JU-NING
Ta-hu Sh.
Ku-tcheng
Siao-sha Ho
Fang-kia-tsi
Yang-pu-chên
Wa-tien-tsi
Tchang-kuan-tien
YING-CHOU
Huai-yü
Li-thien
Hei-lung-tsi
Yüan-thao
Son-li-tien
Han-kia-chuang
Thung-yi-tchêng
Kao-phan
Liu-tung-khou
Kie-kou-tsi
Shang-yao-chê
Khio-shan
Pi-yang
MOUNTAINS
Thsing-ti-tsi
Tsou H
Kie-ho
Yü-ti
Kiu-yün Ho
Kin-hiang
Yü thai
Shan
Thsao
Shun-ti Ho
Phei
Fêng
Hua-shan-tsi
Ku-kia-khou
Tang-shan
Hia-yi
Wa-tsü-kh
Sü-khi-khou
Yung-tchêng
Po-shan-yi
Ssü-phu
Shui-tchi
Nan-phing-tsi
Chao-kia-tsi
Pan-khiao-tsi
Mêng-tchêng
Tung-fei H
Kie-kou-tsi
Chai-thou
Ho-kia-liu
Huai-yü
Shang-yao-chê
Thsing-ti-tsi
Sü-khi-khou
Yung-tchêng
Po-shan-yi
Ssü-phu
Shui-tchi
Nan-phing-tsi
Chao-kia-tsi
Pan-khiao-tsi
Mêng-tchêng
Tung-fei H
Kie-kou-tsi
Chai-thou
Ho-kia-liu
Huai-yü
Shang-yao-chê
Thsing-ti-tsi
Sü-khi-khou
Yung-tchêng
Po-shan-yi
Ssü-phu
Shui-tchi
Nan-phing-tsi
Chao-kia-tsi
Pan-khiao-tsi
Mêng-tchêng
Tung-fei H
Kie-kou-tsi
Chai-thou
Ho-kia-liu
Huai-yü
Shang-yao-chê

Chang thsiu-chên
Yang-ku-tien
Pa-li-miao
Tai-kia-miao
Kuan-tchêng
Shou-chang
Fan
Thsing-fêng
Nan-thsing-tien
Hou-êrh-chuang
Kuan-ti-miao
Xi-tha-miao
Lung-chü-tien
Pu
Khai.
Yellow River
Yün-tchêng
Yuan-kia-khou
Nan-wang
Khang-chuang
Li-shan
Tu-shan
An-kü-tien
Kia-siang
Kü-ye
Chao-wang Ho
THSAU-CHOU
Nan wu Shan
Man-kia-ying
Wan-fu Ho
Kin-ti-tsi
Ma-kia-tsi
Ting-thao
Pai-hua Ho
Yen-tai
Kin-hiang
Tchêng-wu Shan
Shêr-phêng
Fou-kan-tsi
Thsao
Liu-kia-tsi
Shun-ti Ho
Chao-kia-chuang
Fêng
Hua-shan-tsi
Old course of the Yellow River (before 1852)
Khao-tchêng
Ho-yai
Yü-tchêng
Pei-sha Ho
Ning-ling
Shui-tchi-phu
KUI-TÊ
Yü-siang-phu
Yang-yi-phu
Sui
Yen-kia-tsi
Thsai-kia-tao-khou
Ku-shui
Shi-liu-kai
An-kia Ho
Nan-sha Ho
Hui-tsi Ho
Wu-siang
Hui-thing
Tsi-yang
Tsan-yang
Chê-tchêng
Ke Ho
Ma-tchang-tsi
Lao-chung-tsi
Lu-yi
Chao-thsun
Po
TCHÊN-CHOU
Tan-tchêng
Pêng-thang-tsi
Lu-thai
Huai-tien-tsi
Chi-tien-tsi
Shên-khiu
Pên Ho
Shên-khiu-tsi
Thung-yang-chên
Wa-tien-tsi
Tchang-kuan-tien
Tao-phan
Tsi-Ning
Kia-siang
Kü-ye
Sin-cha
Erh-kia-phu
Kie-ho
Lu-khiao
Nan-yang-cha
Chao-yang
Sin-khou Ho
Kiu-yün Ho
Yü-thai
Hia-chên
Shun-ti Ho
Chao-kia-chuang
Fêng
Hua-shan-tsi
Ku-kia-khou
Tang-shan
Nan-chên-tsi
Lung-kou Ho
Pa-kou Ho
Thsing-ti-tsi
Lu-kia-tsi
Tsan-hien-tchêng
Thie-fo-ssu
Po-shan-yi
Wu-ma-kou
Tchê-kia-pu-khou
Shi-tsü-ho
Sha-thu-tsi
Chao-khi-thun
Shuang-kou-tsi
Fei-ho-khou
Ni-khiu-tsi
Kie-shou-tsi
Wang-shi-tsi
Shuang-kien-tsi
Tung-kia-tsi
Siao-khiao-kou
Kie-phai
Sie-kia-tsi
Ta-hing-tsi
Thsü-ho-pu
YING-CHOU
Kie-kou-tsi
Liu-tung-khou
Tsu lai Sh.
Kuan-khiao
Yang-lui-tien
Ta-wên-khou
Wen Ho
Siao-wên Ho
Thsing-kê-chuang
Sin-thai
Ao-yang
Po-ma-kuan
Thien ma Sh.
Shi mên Shan
Tchi-ho-phu
Wên-shang
Ning-yang
Tomb of Confucius
Sin-tien
Sin-kia
Chao-khiao-phu
Ssü Ho
Ssü-shui
Khü-fou
YEN-CHOU
Tsou
Yi Shan
Thsüan ku Shan
Mao-yang-chên
Kiu-nü-kuan
Phei-wei Sh.
Tchang-lu
Yao Sh.
Su-thsun-tsi
Süe Shan
Yi-shui
Yung-fu Shan
Ki-wu Shan
Wei Ho
Chu-tchêng
Shi-liang-chuang
Ling-shan-wei
Thsing-tao
KIAO-CHOU
Kuan-shu
Shi-khiao
Shang-ye Shan
An-chuang-tien
Kung-ning
Mu-ling-kuan
Ku-chên
Tolosan I.
Liang-tcheng-tsi
Hia-ho-so
Lang-ye thai I.
Liang-kiang
Tolosan Thsuan Ho
AN-KIA-KHOU BAY
Ji-chao
Tower Pt
Chai-li-ho
Sin-tien
Hia-yuan
Pei-khe-tsi
An-tung-wei
Flat I.
Chê-wang
Lung-wang-miao
Kan-yü
Thsing-khou
Chai-tu-khao
Sha-ho
Hü-kou-tchêng
Yün-thai Shan
YU-CHOU I.
Fêng-huang-tchêng
Nan-tchêng
Hai
Tho-fêng
Tchi-an-chên
Fang-shan-chên
Sin-pa-chên
Pan-phu
Tha Shan
Sang-khü
L. Thsing-yi
Ta-yi-chên
Chung-chên
Shu-yang
Shu Ho
L. Shi-huang
Old mouth of the Yellow River
Sin-an-chên
Wu-kiang-khou
Pei-sha-chên
Shuang-ya
Shê-ya
An-tung
Fou-ning
Miao-wan-ying
Shê-yang Ho
Shang-kang
Sin-hing-tchang
Yen-tchêng
Po-yang-thsun
L. Ta-tsung
Pao-ying
L. Kuang-yang
Pei-sung-chuang
Po-kai-tchung
Sha-kou-chên
An-têng-chên
Lin-tsi-chên
Lu-an-kou
Hing-hua
Ling-thing-chên
Tchang
Tung-t
Wu-thiao-S
Fei (Pi)
Chung-ting Shan
Fang Ho
Ki Shan
YI-CHOU
Su Ho
Shu Ho
Thsing-tho-ssü
Su-kung-tien
Kê-kou-tsi
Pan-tchêng
Ta-phing-tsi
Tsao-kou
Thêng
Lake
Sü-kia-ying
Kuan-khiao
Phan lung Ho
Lin-tchêng
Sha-kou-ying
Han-chuang
Ting-kia-miao
Thai-êrh-chuang
Li-kao
Wang mu Shan
Liu-thsien-phu
Chên-kia-tsi
Thian Sh.
Thai Sh.
Wei-kia-tsi
Siao
SU-CHOU
Lung-kou Ho
Fang-thsun
Thao-shan
Thai-thsun Ho
Sü-khi-khou
Kia-kou
Khui Ho
Su
Lang Shan
San-shi-li-phu
Shui-tchi-phu
Ta-tien
Nan-phing-tsi
Chao-kia-tsi
Jên-khiao
Ling-pi
Tchang-chi-kou
Pan-khiao-tsi
Si-yang-tsi
Kê Ho
Mêng-tchêng
L. Thsing-yu
Tung-fei Ho
Hie Ho
Ku-chên
Lien-tchêng
Wang-chuang
Ssü
Tho Ho
Leng-fan-tsin
Shang-thang-tsi
Wu-ho
Fou-shan
San-phu
Ho-kia-liu
Tchang-huai-wei
Lin-huai-chên
(Hao-liang)
Mei-tcheng-sou
Huai-yüen
King-shan-khou
FÊNG-YANG
Shang-yao-chên
Liu-fu
Tsung-phu
Kia-kou
Ku Shan
Ai-shan Ho
Ai Shan
Phei Ho
Ku-lung Ho
Si-kia Ho
Lo-thêng-tsi
Li-kia-chuang
Ma-chan
Ma-thou-tsi
Than-tchêng
Chung-hing-tsi
Hung-hua-pu
Liu-ma-chuang
Sü-thang-khou
Ma-chuang-tsi
Yao-wan
Chang-shan-phu
Kiu-lung-miao
Su-thsien
Shun-ho-tsi
Lake Po-thang
Fan-kia-wa
Sui-ning
Ku-tchêng
Thsui-chên
Yang-hua-tsi
Kien-khiao
Chung-hing-tsi
Yü-kou-tsi
Thao-yuan
Wang-kia-ying
Thsing-kiang-phu
Thsing-ho
HUAI-AN
Phing-ho-khiao
Kuo-kia-yen
King-ho
Hiang-phu
Lake Pao-ying
Tsang-kia-pa
Pao-ying
Fan-shu
Kie-shou
Lake Kao-yu
Kao-Yu
L. Liu-yang
Shuang-kou-chên
Pao-kia-tsi
Kuan-kang-tien
Hü yi
Kiu-hien
Kiu-phu-chên
Lake Hung-tsê
Lake Hung-tsê
Ssü
Thsing-yang-tsi
Sui Ho
Su
Ku
Yi
Phei
Kan
Thsing
Hung
Hai
Shu
Ho
Yen
Ho
Yi
Ho
Ssü
Ho
Khui
Ho
Kui
Ho
Tho
Ho
Hie
Ho
Ku
Lung
Ho
Si-kia
Ho
Ai-shan
Ho
Siao
Ho
Shui
Ho
Yi
Ho
Yen
Ho
Shê-yang
Ho
Ta-tsung

PREPARED IN THE

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE, MILITARY INFORMATION DIVISION,

WASHINGTON, U.S.A.

1900.

SCALE

10 0 10 20 30 40 50 MILES.

CONVENTIONAL SIGNS.

- Boundary of Provinces.
- Boundary of Mongol clans or banners.
- Fu – Capital of Province.
- Fu – Prefectural City, or City of 1st order.
- Chi-li-Chou or simply Chou – independent Department City, or City of 2nd order.
- Chou – Department City, or City of 2nd order.
- Hien – District City, or City of 3rd order.
- Thing – Subprefectural City.
- Yi – Post-town.
- Small Town, Village.
- Imperial Tombs.
- Mountain Pass.
- Main Roads.
- Smaller Roads.
- Rail Roads.
- Rail Roads Projected.
- Great Wall.
- Place where a river becomes navigable for larger boats.
- Place where a river becomes navigable for smaller boats.

Heights in feet.

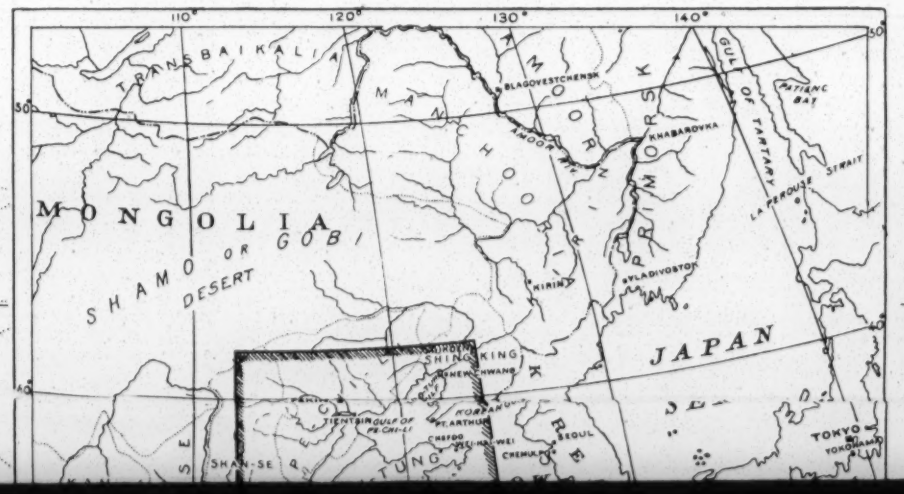
NATIVE TERMS IN USE.

At the end of geographical names:

Kiang, Ho, Tchuan, Ula, Muren, Tchu — Stream, River.
Shui, Kou, Thsuan, Khi, Gol, Usu — Streamlet, small River.
Hu, Nor, Omo — Lake.
Po, Tsê, Tien — small Lake, Swamp.
Hai — Sea, sometimes Lake.
Tao, Shan (properly meaning mountain) Island.
Than — Rapids.
Sha — Sands.
Shan, Alin, Hada — Mountain, Mountain Range.
Ling — Pass over a Mountain ridge, sometimes Mountain range.
Khou — Mouth of a River or Pass, often used to designate a place situated at the mouth of a River or Pass.
Tchêng, Chên, Balgasu, Holo or Holun-Tom, large Village.
Chuang, Phu, Tien, Thsun, Tsi, Thun, Ssŭ, Tchang — Borough, Village.
Kuan, Chai, Ying, So, Wei — Fortified military Place, Camp.
Khiao — Bridge.
Miao — Temple. Mên — Gate.

At the beginning of geographical names:

Ta — Great.
Siao — Small.
Pei — North.
Nan — South.
Hei (in Mongol Hara) — Black.
Huang (in Mongol Shara) — Yellow.
Pai or Po (in Mongol — Tsagan — White.
Si — West.
Tung — East.
Shang — Upper.
Hia — Lower.



XUM

HONAN

HUPEH

34°
33°
32°
31°

Sung
Lao-kün Shan
Yi-yang Ho
Ju
Wan-chi Shan
Lê tien
Yu
Shi-ku
Tsi-chung-khiao
Fu-kou
Hu
Hung-hua-tsi
Thai-khang
Ke Ho
Chê-tchêng
Wu-siang
Hai-thing
Tsan-yang
Yung-tchêng
Thsing-li-tsi
Sin-kia-tien
Ta-ying-kai
Chang-phan-tien
Li-kia-khiao
Miao-kia-tsi
Lao-chung-tsi
Ma-tchang-tsi
Lu-kia-tsi
Tsan-tien-tchêng
Thie-fo-ssu
Po-shan-yi
Pao-fêng
Chu Ho
Ta-shi-khiao
Si-hua
Lu-yi
Chao-thsun
Wu-ma-kou
Tchê kia pu-khou
Po
Su
Siang-tchêng
Lin-ying
Hia-thing
Lan-lin-tsi
TCHÊN-CHOU
Lang Shan
Lu-yang-kuan
Lu-shan
Sha Ho
Sin-tien-phu
Fu-niu-Shan
Si-thang Shan
Shê
Lo-kang
Siao-shang-khiao
Siao-yao
Yung-ning-tsi
Chou-kia-khou
Shi-tsŭ-ho
Tan-tchêng
Sha-thu-tsi
Chi Ho
Sŭ-shi-li-phu
Pi-wu-tu
Yen-tchêng
Shang-shui
Fêng-thang-tsi
Chao-khi-thun
Nan-ping-tsi
Shui-tchi-phu
Hui Ho
Kiu-hien-chên
Li Ho
Siao-thao-tien
Sin-chan-tsi
Lu-thai
Shuang-kou-tsi
Kê-yang (Chi-ho-tsi)
Chao-kia-tsi
Shêng-to Shan
Nan-chao
Wu-yang
Kuo-kia-tien
Fei-ho-khou
Pan-khiao-tsi
Thsao-tien
Thai-fêng Shan
Pao-an
Hua-phi-tsi
Huai-tien-tsi
Si-yang-tsi
Kê Ho
Lung-thsüan-tien
Si-phing
Ni-khiu-tsi
L. Thsing-yu
Mêng-tchêng
Tung-fei Ho
Chao-fu-kang
Heng-khiao
Hiang-tchêng
Chi-tien-tsi
Kie-shou-tsi
Wang-shi-tsi
Shuang-kien-tsi
Kie-kou-tsi
Yü
Shi-chou
Chao-ho-phu
Thsai-chai
Shang-thsai
Shên-khiu
Pên Ho
Kiu-tien
Tung-kia-tsi
Po-wang
Hua Shan
Sui-ping
Shê-khiao-tsi
Thai-ho
Sha Ho
Siao-khiao-kou
Chai-thou
Chên-ping
Phu-shan-tien
Hia-khiu-phu
Shê-khi-chên
(Shi-kia-tia-rh)
Thung-yang-chên
Kie-phai
Shên-khiu-tsi
Kie-kia-tsi
Ho-kia-liu
Fu-yu Sh.
Sha-ho-tien
Ju Ho
Thsŭ-ho-pu
Ta-hing-tsi
NAN-YANG
415 f
Chu-ma-tien
JU-NING
YING-CHOU
Huai-yüen
Thsŭ-khiu Sh.
Ta-hu Sh.
Ku-tcheng
Siao-sha Ho
Fang-kia-tsi
Yang-pu-chên
Wa-tien-tsi
Tchang-kuan-tien
Thsing-hua-chên
Thun-êrh
Li-thien
Hei-lung-tsi
Lin-shai
(Wa-tien)
San-li-tien
Han-kia-chuang
Phing-yü-tcheng
Liu-tung-khou
Kie-kou-tsi
Shang-yao-chên
Lu-shi-li-phu
Shi-thou-phu
Yüan-than
Pi-yang
Khio-shan
Sin-thsai
Kiang-khou-chên
Ku Ho
Teng
Ki-than
Yü-kia-tien
Ta-ho-thun
Thang
Thung Shan
Pi Ho
Kuo-kia-tien
Ju Ho
San-shi-li-phu
Ju-nan-chên
Thao-hua-tien
Ying-shang
Hia-thsai-chên
An-thou-phu
Pan-tcha-tien
Miao-yen-phu
Ma-lau-thien
Wu-chai Ho
Yu-fang-tien
Thung-kuan-tien
Sin-ye
Kuo-kia-than
Kao-tien
Hui lung Sh.
Chêng-yang
Shou
(Feng-thai)
Po-lu-khiao
Tao Ho
Sin-tien
Thien-mu Sh.
Ming-kiang
Phêng-kia-tien
Thsai-kien-phu
San-shi-li-phu
Shêng-fo-ssŭ
Yen-kia-phu
Lu-kia Ho
Chao-chuang
Phing-tchang-kuan
Si
Huai Ho
Siao-huang Ho
Chêng-thang-phu
Liu-tsŭ-khou
Huo-khiu
Wa-pu
Lü-yen
Tchên-kia-ho
Thung-po
Khi lung Sh.
Tchang-thai-kuan
Chung-thu-tien
Pao-tsŭ-khou
Tchun-ho-phu
Thsao-kia-tien
Shuang-mên-pu
Pi-kiu-tsi
Thung po Sh.
Thoui phing Sh.
Wu-li-tien
Lo-shan
Ku-shu
Huang-ssŭ-kang
Ho-khou-tsi
San-liu-tsi
Ying-ho-tsi
Shuang-kou-chên
Thsien-kia-kang
Tchu-shan-tien
Chai Ho
Kuang
Yin-hien-tsi
Tsao-yang
Sin-Yang
Shi Ho
Chu-kan-phu
Siao-huang Ho
Chai-tchô
Shi-thao Ho
Ma-thou-tsi
Thai-yang-phu
Thien-ho-khou
Kuang-shan
Shi-tô-tien
Lu-kia-tien
Khai-shun-chên
Mu-tchang-tsi
Kuan-thing-chên
Yen-tun-tsi
Lu-An
Ma-kia-tsi
Su-kia-pu
Su-kia-tien
Thsing-shan-phu
Kie Ho
Pao-êrh-ling
Huo-shan
Shu-tchê
Chang-mu-khiao
Kuan-kia-tu
Fang-kia-ping
Thien-thang Sh.
Thung-tchêng
Ya-thsien
Lung Sh.
Thao-tchung
Lien-than
Siao-tsu-khou
Huan Sh.
Lo-thien
Yai-khou
Liu-tsŭ-khou
Wa-tsu-khou
Thsing-li-tsi
Su-khi-khou
Lang Shan
Shui-tchi-phu
Nan-ping-tsi
Chao-kia-tsi
Pan-khiao-tsi
Tung-fei Ho
Kie-kou-tsi
Shuang-kien-tsi
Chai-thou
Ho-kia-liu
Huai-yüen
Shang-yao-chên
Shi-thou-phu
An-thou-phu
Hia-thsai-chên
Po-lu-khiao
Shêng-fo-ssŭ
Wa-pu
Yi-fêng
Hao-chai-pu
Ma-thou-tsi
Phi Ho
Lu-kia-tien
Mu-tchang-tsi
Kuan-thing-chên
Ma-kia-tsi
Su-kia-tien
Thsing-shan-phu
Kie Ho
Shu-tchê
Chang-mu-khiao
Kuan-kia-tu
Thung-tchêng
Ya-thsien
Lung Sh.
Thao-tchung
Lien-than
Siao-tsu-khou
Huan Sh.
Lo-thien
Yai-khou
Thsao-kia-tien
Huo-khiu
Wa-pu
Yi-fêng
Hao-chai-pu
Ma-thou-tsi
Phi Ho
Lu-kia-tien
Mu-tchang-tsi
Kuan-thing-chên
Ma-kia-tsi
Su-kia-pu
Su-kia-tien
Thsing-shan-phu
Kie Ho
Pao-êrh-ling
Huo-shan
Shu-tchê
Chang-mu-khiao
Kuan-kia-tu
Fang-kia-ping
Thien-thang Sh.
Thung-tchêng
Ya-thsien
Lung Sh.
Thao-tchung
Lien-than
Siao-tsu-khou
Huan Sh.
Lo-thien
Yai-khou
Liu-tsŭ-khou
Wa-tsu-khou
Thsing-li-tsi
Su-khi-khou
Lang Shan
Shui-tchi-phu
Nan-ping-tsi
Chao-kia-tsi
Pan-khiao-tsi
Tung-fei Ho
Kie-kou-tsi
Shuang-kien-tsi
Chai-thou
Ho-kia-liu
Huai-yüen
Shang-yao-chên
Shi-thou-phu
An-thou-phu
Hia-thsai-chên
Po-lu-khiao
Shêng-fo-ssŭ
Wa-pu
Yi-fêng
Hao-chai-pu
Ma-thou-tsi
Phi Ho
Lu-kia-tien
Mu-tchang-tsi
Kuan-thing-chên
Ma-kia-tsi
Su-kia-pu
Su-kia-tien
Thsing-shan-phu
Kie Ho
Pao-êrh-ling
Huo-shan
Shu-tchê
Chang-mu-khiao
Kuan-kia-tu
Fang-kia-ping
Thien-thang Sh.

Ta-tien
Thsing-yang tsi
Ling-pi
Thsing-kiang phu
Thsing-ho
Shê-yang Ho
Miao-wan-ying
Po-Sha
Chao-khi-thun
Nan-ping-tsi
Kê-yang (Chi-ho-tsi)
Chao-kia-tsi
Jên-khiao
Tchang-chi-kou
Shuang-kou-tsi
Kui Ho
Ssŭ
Tho Ho
Léng-fan-tun
Shang-kang
HUAI-AN
L. Ta-tsung
Sin-hing-tchang
Yao-Sha
Pan-khiao-tsi
Ku-chên
Lake Hung-tsê
Phing-ho-khiao
Kao-kia-yen
King-ho
Huang-phu
Po-yang-thsun
Yen-tchêng
Si-yang-tsi
Kê Ho
L. Thsing-yu
Mêng-tchêng
Tung-fei Ho
Hie Ho
Lien-tchêng
Shang-thang-tsi
Wang-shi-tsi
Shuang-kien-tsi
Tung-kia-tsi
Kie-kou-tsi
Wu-ho
Wang-chuang
Fou-shan
Shuang-kou-chên
Lake Pao-ying
Tsiang-kia-pa
Pao-ying
L. Kuang yang
Pei-kung-chuang
Po-kai-tchung
Yin-Sha
Chai-thou
Siao-khiao-kou
Pao-kia-tsi
Kuan-kung-tien
Sha-kou-chên
Tho-tzŭ-kha
Sha
Kie-phai
Sie-kia-tsi
San-phu
Ho-kia-liu
Thsi-ho-pu
Ta-hing-tsi
Tchang-huai-wei
Lin-huai-chên (Hao-liang)
Hü yi
Lin-tsê-chên
Lu-an-kou
An-fêng-chên
Huai-yüen
King-shan-khou
Hiu-hien
Tcha-kia-tu
Mei-tcheng-ssu
FÊNG-YANG
YING-CHOU
Lake Kao-yu
Hing-hua
Kao-Yu
L. Lu-yang
Ling-thing-chên
Tung-thai
Liu-tung-khou
Kie-kou-tsi
Shang-yao-chên
Liu-fu
Tsung-phu
Khao-tchêng
Lien-thang
Kiu-phu-chên
Tchêng-mên-hiang
Shi-liang Ho
L. Shao-po
Fan-tcha-chên
Ning-hiang
Fu-an-tchang
Lu-shi-li-phu
Kiang-khou-chên
Shi-thou-phu
Hung-sin
Hi-yang Sh.
Kien-khi-chên
Tcha-kien-chên
Thien-tchang
Phing Shan
Lu-kin
Shao-po-chên
Sien-nü-miao
Phan-kia-yen
Hai-an-chên
San-shi-li-phu
Ying-shang
Hia-thsai-chên
An-thou-phu
Tchi Ho
Shi-ku Shan
Tchi-ho
Yü-kia-wa
Thung Shan
Ta-yi-chên
Wan-thou
Yi-ling
Thai
Yen Ho
Kiang-yen-chên
Ju-kao
Fêng-li-tchang
Shou (Feng-thai)
Wang-kang-phu
Po-lu-khiao
Ting-yüan
Ta-liu
Thsü-phei-shi
Lai-an
Huang-ni-pa
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Wu-lin
HANG-CHOU
Thien-mu Shan
Kan-phu

At the beginning of geographical names:

Ta—*Great*.	Hei (*in Mongol* Hara)—*Black*.	Si—*West*.
Siao—*Small*.	Huang (*in Mongol* Shara)—*Yellow*.	Tung—*East*.
Pei—*North*.	Pai or Po (*in Mongol* —	Shang—*Upper*.
Nan—*South*.	Tsagan—*White*.	Hia—*Lower*.

INDEX MAP

Scale: 0 100 200 300 400 500 MILES

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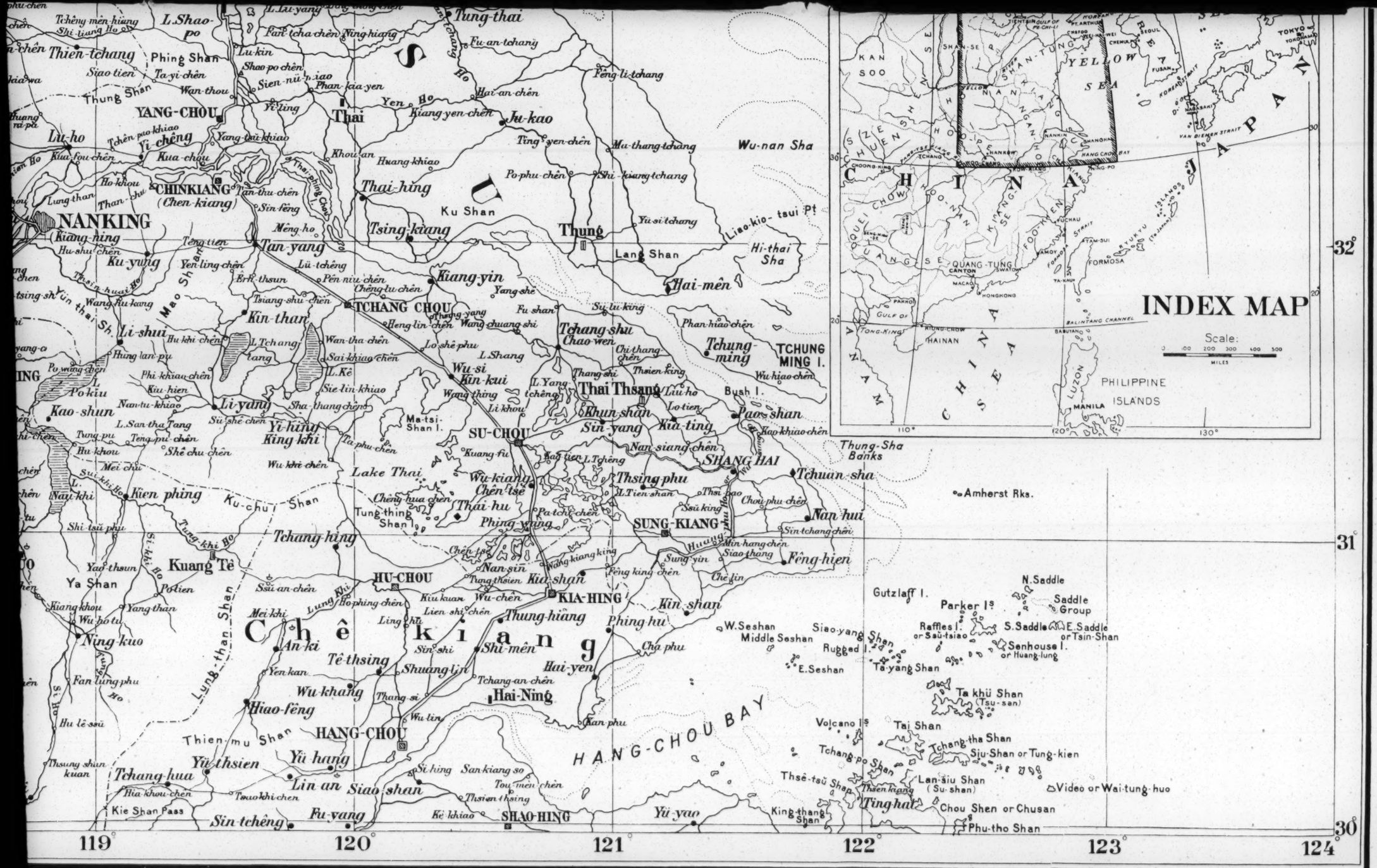
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THE
NATIONAL GEOGRAPHIC MAGAZINE

VOL. XI SEPTEMBER, 1900 No. 9

THE COLORADO DESERT

By DAVID P. BARROWS

The Colorado River, its cañon valley, and flood-plain constitute a series of physiographic conformations of impressive variety. The upper part of its course has been eroded across the great elevated plain of western America, through which it has cut its channel downward with so great rapidity that its valley walls, almost unaffected in comparison by weathering, rise sheer upward in the gigantic system of gorges known as the Grand Cañon of the Colorado. From the point where it enters California it is no longer a downward eroding stream, but sweeps grandly across the sterile plain of the desert, a dark, sediment-laden current, swinging back and forth across its widening valley. As it nears the Gulf of California and the rapidity of its stream lessens, the enormous loads of fine rock material, cut from the valleys through which it has torn its way, are deposited in a great flood-plain or delta, across which the stream pours south into the gulf.

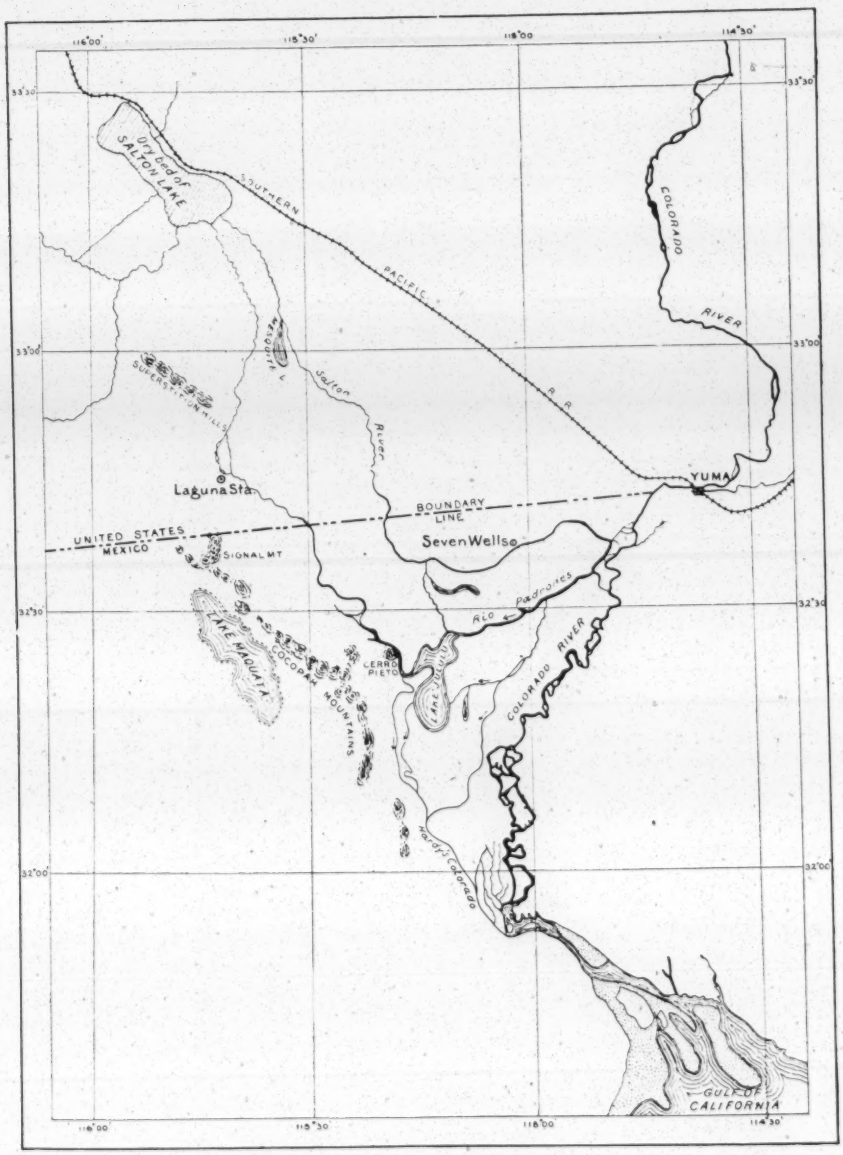
As above this delta the low banks are unwatered, except at the very margins of the river, the sterility of the surrounding country is unaffected by its immense volume of water.

From whatever direction you approach the river within California or Arizona, the trail lies across sandy hill and thirsty plain, where are the dark marks of old volcanic activity, grotesque rock forms, shaped by wind erosion, and occasional stunted clumps of desert plants, with extremely modified foliage; but nowhere is there suggestion that you are upon the banks of the mightiest river of western America, until suddenly the ground drops slightly, and in an instant there come the dark green coloring of mesquite growth, the bright foliage of cottonwood and willow, the dazzling gleam of wide waters, flowing swiftly, and you are beside the long, shining river of Lopez de Cardenas and Alarcon.

The discovery of the Colorado is one of the romances in the history of the discovery of this continent. In August, 1540, only 48 years after the first voyage of Columbus, the three small ships of Captain Hernando de Alarcon, sent up the Gulf of California to coöperate with the land expedition of Coronado, arrived at the shallow, treacherous head of the great estuary, and, in the language of the chronicle, "it pleased God that after this sort they should come to the very bottom of the bay, where they found a mighty river, which ran with so great a fury of a stream that they could hardly sail against it. So they entered into two boats, which men towed along with ropes from the shore." Up this river, which he named the "Buena Guia," cultivating friendly relations with its numerous Indian peoples, Alarcon went as far, it is believed, as the junction of Williams Fork, 85 leagues, according to the Relacion, "to where the river forms a straight channel between high mountains."

In the same months that Alarcon was dragging his boats up the turgid current, Coronado, now at the Pueblo of Zuñi, heard of the Moki Pueblos of Tusayan. Pedro de Tobar, with 20 men and a priest, made the expedition from Zuñi into that desolate corner of Arizona, where high on their mesas are still standing, as they stood then, the cliff villages of Hualpai and its companions. From these Indians Tobar heard of a great river flowing across the western desert, and returning with this information to Coronado, the chief dispatched Garcia Lopez de Cardenas to search for it. His little band, returning to the Moki villages, struck boldly out across the desolate plain of the "Painted Desert," and after days of travel stood on the brink of that chasm of chasms, the Grand Cañon of the Colorado. They gazed northward across the apparently unending buttes and gorges of the wonderful system, but were unable to reach the great river that looked like a slender rivulet far beneath them. "Its banks were so high," says the Relacion, "that they seemed to be raised three or four leagues into the air. The country is covered with little, stunted fir-trees, is exposed to the north, and is so cold that, although it was summer, we could hardly bear it."

Thus from sea and by land in the same year did the men of Spain discover the noble river of the Colorado at its most stupendous approaches. Almost at the same time a third little band, under Melchor Diaz, starting from the settlement of San Hieronymo, on the Rio Sonora, traversed Arizona from east to west and reached the banks of the Colorado which Alarcon had recently trodden. "In the



MAP SHOWING THE COLORADO DESERT REGION

course of less than six months," says Bandelier, "the Spanish reconnoitering corps had thus three times touched the largest river of western America, had explored its shores with tolerable accuracy for a considerable length of its course, and had also traveled in two directions through parts of Arizona which have only in very recent time again attracted attention."

The arid region of North America covers a large area. Throughout there is presented that strange uniformity of physical features and life-forms that characterizes deserts the world over. The southern portion of the Colorado Desert possesses, however, *bizarre* and curious features of its own. Its area is commonly understood to comprise the great depressed valley lying half in southern California and half in Lower California, inclosed on the west by the southward extensions of the San Jacinto Mountains, on the north by the desert range of the San Bernardino and Chocolate Mountains in California, and on the south by the course of the Colorado River from Arizona to the gulf.

In very recent geological times this region was an arm of the sea and the Colorado River reached the Pacific Ocean at Yuma. The geological changes that won this valley from the gulf seem to have been two: the upbuilding of an enormous delta from the deposits of the Colorado, and the crustal elevation of the earth beneath the central region covered by this delta to a height sufficient to divide the depression and to retire the gulf to its present shores far south of the line, while it left the upper part still below the level of the sea.* These movements turned the Colorado River into the region still depressed and transformed it into a splendid fresh-water lake. The evidence of the extent of this body of fresh water is most interesting. Its old floor remains, a deep accumulation of fine, fluviatile soil, rich as the delta of Egypt, which in places is whitened by myriads of fresh-water shells, several small univalves, and a single bivalve, varieties of *amnicola* and *anadrom* still to be found alive in the Colorado itself. For miles along the mountain bases at the northern end, where the still waters of the lake once reached, there runs a broad, white band of calcareous deposit from the tiny mollusca that at one time inhabited its shores. Gradually, however, the river which fed this lake by its constant deposits built up an elevated flood-plain about its mouth that diverted its waters more and more away from the lake until the main channel, impounded in levees of its own making, carried the current

*Salton, the lowest point in the desert, is given at 263 feet below sea-level, while Yuma is 275 feet above.

southward once more to the sea. The lake, fed irregularly and poorly, gradually dwindled as the silted banks of the Colorado became more secure, until it is represented today only by the Salton morass and other lagoons and the summer overflow streams by which these are supplied.

All this took place in very recent time. The Coahuila Indians, who today inhabit the upper end of the valley, have a distinct and credible tradition of the drying-up of this lake and of the occasional sudden return of its waters; and the Diegueños, who lived at a time when the supply of water along the central portion of the valley was probably much greater than at present, raised on the naturally irrigated soil abundant crops of maize, melons, and beans. But slowly the valley was abandoned to aridity. Almost unvisited by rainfall except about the edge of the mountains, the loss of the river left it cruelly dry. Low and inclosed between heat-reflecting ranges that shut off the breezes of the ocean, it gained a temperature which is one of the highest on the globe. The wind storms that rage up the valley from the southeast have drifted great dunes of sand over certain portions, and much of the country never reached by the deposits of the lake is as black, stony, and repulsive as eruptive rock formations in the desert can be. Apparently about the middle of the first half of the century the overflow from the Colorado was largely checked and not resumed to any extent until the year 1849. The Indians, who had lived in plenty along the central valley, were driven by the drought forever from their homes.

In November, 1847, the advance column of American troops, under Kearny, moving across from Fort Leavenworth for the conquest of California, crossed the desert from Yuma to San Diego. The troops suffered severely from thirst, finding no water, except a scant supply at Alamo Mocho, the first station after leaving the Colorado. In the middle of the plain they found a salt pool, approached through a thick, soapy quagmire, but the water was unfit for man or beast. This lake indicates at least a slight overflow at that time, and Major Emory reported that captured Spaniards who guided them told of a stream of running water some miles south of Alamo. This stream the Americans were unable to find (no overflow taking place so late in the fall), and their experience led them to announce the desert as almost wholly without water supply.*

But in 1849 came the rush of emigrant parties from the southern

*See the report of Major Emory, "Notes of a Military Reconnoissance," etc., Washington, 1848, pp. 100–102.

states through Texas and New Mexico along the Gila River trail into southern California, and these parties, pushing from the Colorado across the awful desert that separated them from the fertile lands of the coast, when midway on their course unexpectedly found themselves on the banks of a strong, turgid stream, which was not flowing toward the sea, but sweeping strangely northward into the interior. It was the sudden and dramatic resumption of the old Colorado inundations. They called it the "New River." Lieutenant Wilkinson, writing soon afterward in the Pacific Railroad Reports, says of this phenomenon of 1849:

"In that year the Colorado River was very high, and broke over a part of its banks between the mouth of the Gila and the head of the gulf. The waters flowed inland, running backward through the desert toward the center of the ancient lake. . . . The appearance of the stream was a subject of general surprise and wonder, and was an unexpected relief to the many emigrant parties crossing the desert that year. It is the general belief that this overflow was the first recent instance of the kind, but it had evidently often taken place long before, and there are many reasons for believing that it once flowed in a larger and stronger stream than it has since its existence became known." *

Since 1849 the overflow of the Colorado River has been frequent, and since 1890 uninterrupted every summer. By most dwellers in southern California this overflow is well understood, but very few are aware of the circuitous and remarkable route by which the water of the Colorado, through New River, reaches Salton Sea. High water in the Colorado comes in the months of May and June, and the break in the upbuilt banks of the river occurs 10 or 12 miles below the Mexican boundary line, near Algodones, an old Yuma Indian village, where now is a Mexican hamlet and a station for several customs officers. From near the point where the break occurs a comparatively small current, the East or Alamo River, cuts its channel westward for about 30 miles, and then turns northwesterly into the United States, and on its way to the Salton Sea fills a large depression known as Mesquite Lake. The greater part of the overflow, however, takes another direction, and sweeps southwesterly almost entirely across the lower part of the desert until it meets the slope of the Cocopah Mountains. Here it creates a long, shallow body of water, called Volcano Lake.

This point is the divide, where the desert slopes northward into the United States and southward to the gulf, and from this lake the

* Pacific Railroad Reports, vol. v; "Geological Report," by Wm. P. Blake, Washington, 1857, p. 100.

waters break away in both directions. The main current flows southward, and is called Hardy's Colorado, or the Hardy River. But when the overflow is at its height and the region about the lake has become a vast area of inundation, a splendid stream bursts away down the northern slope backward into the interior. This is the New River. Its main channel is accompanied by many sloughs, and wide areas for miles on each side of the current are submerged. Shortly after crossing the boundary line, the New River flows through a de-

LAND RECENTLY INUNDATED ALONG BANKS OF THE HARDY — THE COCOPAH MOUNTAINS IN BACKGROUND

From a photograph by the author

pression about half a mile long and 20 feet deep, known as Cameron Lake, and from here along its winding course northward are many lagoons and water-holes, for the most part pools of a few acres of extent, lying off the main channel and connected with the New River by short sloughs. They are surrounded by a growth of mesquite, and water in all of them lasts for many months after the New River overflow has ceased. Cameron Lake is one of the largest and deepest, and its waters have usually "held over" from one overflow to the next, the small, dirty, and reeking pool into which it subsides late in

the spring being the main reliance of desert travelers. The river, however, passes directly through the lake, and the loads of sediment which it deposits at every checking of its course are gradually filling up Cameron Lake and making it less reliable.

But even after the great summer inundation of the desert has subsided and Volcano Lake has become exhausted, the Hardy continues to be fed from the break in the Colorado through the Rio Padrones, and throughout the year its channel contains water. In summer and until late in the fall its current is from 100 to 200 yards wide and 20 to 25 feet deep, with a flow of at least two miles an hour in the center of the stream. Below the Sierra Madre it turns eastward, and joins the main channel of the Colorado again just above the gulf. At times of very high water a curious result occurs. Westward of the Cocopah Mountains lies a great depressed plain, lower than the Cocopah Valley, lower than the sea, the desert of the Laguna Maquata or Salada. Like the Colorado, it was lately an arm of the ocean. At the southern end of the Cocopah Mountains the Hardy sometimes overflows and sends a current around the foot of the range and northward into this low region, creating the Laguna Maquata. This desert of the Laguna Maquata is a desperately arid and forsaken country, almost without water, except during these occasional backsets of the Hardy.

The main lines of travel—the old San Diego road through Jacumba Pass and the Warner's Ranch stage road by way of San Felipe and Carriso Creek—meet on their way to Yuma at Laguna Station, pass by Indian Wells and Cameron Lake, and a few miles further on turn southward into Mexico and follow the Alamo wash to the Colorado River and Yuma. Scores of traveling teams continue to cross the desert each year along these old emigrant and government roads. The lower portion of the Colorado Desert, however, which lies in the Mexican Territory of Lower California and which extends from the boundary line to the gulf, is far less known and is, in fact, visited by few Americans or Mexicans. It is known as the Hardy River country or the Cocopah country, from the Indians whose *rancherias* lie along the Hardy Valley and the Lower Colorado.

We visited this interesting country in August, 1899. The overflow had been of unusual amount and of more than ordinary duration. New River was still a swift, roily stream that defied crossing with wagons. All night, in order to avoid the heat of the day, we had been pushing our mule teams across the sandy plains and rough mesas that make up those portions of the desert between the Sierra and the rich, level, fluviatile deposits of the central depression.

THE CRATER OF THE SIERRA PRIETA

From a photograph by Mr Frank Stevens

THE MUD-VOLCANOES OF THE HARDY — COLORADO DESERT

From a photograph by Mr Frank Stevens

Coyote Wells, a historic water-hole, was passed at midnight. The ruins of an old *adobe* hut and a couple of hacked mesquite trees amid the rock and sand gave suggestion of its former importance as a stage and emigrant station. The long, ghostly sand piles of Superstitious Mountain gleamed faintly in the moonlight on the left, while on the right, clear and beautiful, though miles away and below the line, rose the black dome of Signal Mountain. Daylight only made more clear to the eye the sterile and unredeemable character of this part of the Colorado Desert. Too high for the irrigating waters of the river, rough and hard with broken lava, and desolate with wind-piled sand dunes, it must always remain the abandoned area it is at present. By an imperceptible grade the way led down into soil that presented the firm, dry clay deposits of the ancient lake. The discovery of the overflow was unexpected and sudden. There was a wide glint of shallow waters that looked like mirage, then sheets of green things growing riotously in the warm air and wet soil, and a darker fringe of mesquite that bordered lagoons and river. There were in sight a thousand head of cattle recently driven in from the mountains, with heads deeply buried in the succulent herbage. Large flocks of waterfowl waded in the shaded margins of the lagoons and filled the air with their cries. The New River had overflowed its banks at this point, the cattlemen assisting the break by cutting in mesquite trees and damming the current, and swift sloughs, some 20 feet wide, were sweeping out over the plain and irrigating the region for miles. Cameron Lake and the lagoons were full to their brims and the country could be traversed only by making laborious circuits.

From Cameron Lake the trail turns southward, following in the main the channel of the New River. The Cocopah Mountains bound the valley for its whole length from the line to the sea on the west. The slopes and sides of the range appear to be utterly devoid of vegetation. Weathering and wind have broken its long mass into vast fragments of stone. Though occasionally exhibiting delicate tints of color, its general appearance is the sand gray and volcanic brown of desert formations. Groves of ironwood grow along its base amid the rough detritus that forms great alluvial fans. Elsewhere along the base of the range there is a vigorous growth of the "okatilla" (*Fouquiera spinosa*), curious clumps of long, whip-like stalks, devoid of foliage, but covered everywhere with thorns. The creosote-bush (*Covillea tridentata*) dots the sands. Far back in the cañons are groves of the tall and wonderful desert palms, indigenous to the Colorado Desert region, probably the *neowashingtonia filamentosa*.

As the way leads southward, Signal Mountain, the northern peak of the Cocopah range, disappears from view, but in front appears, rising from the plain, an isolated and striking landmark, the noble crater of the Sierra Prieta, called by Americans "Black Butte." Such active eruptions of lava as built up this perfect crater are indeed past, but secondary volcanic activity is still present in the hot mineral springs that surround the Colorado Desert and in the beautiful eruptive mud springs or *salses*, known as mud-volcanoes. These are found in two places on the Colorado Desert—in the Cocopah Valley a few miles from Sierra Prieta, and far north, just south of Salton Sea.*

The whole region of the Sierra Prieta is full of evidence of recent action. North of the mountain and half a mile from its base are three hillocks, the largest 100 yards long and 50 feet high, which were evidently formed by the eruption of soft mud accompanied by gas. The rock of these mounds is imperfectly hardened mud, full of vesicular cavities such as would be formed by the presence of gas in the mud eruption. The Sierra itself is several hundred feet high, and, with the deposits of broken lava that surround its base, has a circumference of seven or eight miles. The rock is scoriaceous lava, with occasional basaltic blocks that exhibit an imperfect culumnar structure. The rock of the sides is much broken by weathering, but the edge of the crater is beautifully defined. The floor of the depression is smooth and level and covered with fine clay, evidently blown in by winds. Water at times has stood at considerable depths within the crater. It is 250 paces across the perfectly circular bottom. At the center of the floor a small basin has been scooped out by human hands to collect the last drops of rain water.

The mud-volcanoes lie on a flat, mud plain south of the Sierra Prieta, and during the overflow are surrounded by the waters of the New and Hardy Rivers and the "salt slough;" also a few of the springs are buried beneath the risen waters of Volcano Lake. At the time of my visit one of these springs was erupting beneath the water, throwing up mud several feet above the surface with a cannonading that could be heard at a distance of three or four miles. Along the shores

* For an interesting description of their discovery by Major Heintzelman, in 1852, see Pacific Railroad Reports, vol. v; "Geological Report," by Wm. P. Blake, p. 115. See also "An account of some volcanic springs in the Desert of the Colorado in Southern California," by Dr John L. Le Conte, American Journal of Science and Art, 2nd series, vol. xix, May, 1855, and "Notes of a visit to the mud-volcanoes in the Colorado Desert in the month of July, 1857," by Dr John Veatch, in the same journal, vol. xxvi, p. 286, 1858, and also published in the Proceedings of the California Academy of Science, 1857, p. 104.

of the lake spurted jets of hissing steam, and little streams of hot water escaped from the fissures. Tiny monticules of mud were everywhere. At the edge of the water were four or five mud craters, 8 to 12 feet in diameter, filled with hot water, in which was a constant ebullition and escaping of gas. The bank was covered with black earthy deposits, and a curious reed grass grew at the edge of the water. The moist ground was everywhere hot and the tiny rivulets scalding. The retiring of the shores of the lake after the overflow has ceased leaves most of this ground dry during the greater part of the year. A small pool is left, however, whose waters assume a deep wine color, due, I should suppose, to deposits of peat derived from old growths of the reed grass. It is called the Laguna Prieta, or Ink Lake. At this place I noted that the retiring waters, trickling through a small basin, twenty feet across, had left it full of a beautiful deposit of sodium chloride, gleaming white and apparently pure.

The real center of activity is a quarter of a mile south of this point and on considerably higher ground. Barren sand-hills covered with broken pieces of lava girt a small amphitheater on the west, and low mounds of soft eruptive rock lie between it and the lake. The whole of the mud floor between is hard-dried and rough, gleaming white with salt incrustations and dotted with these mud-volcanoes. Some of the craters are beautifully shaped, running up to perfect cones, like mud beehives or gigantic swallows' nests. I counted some 70 in this plain. Many were quiescent, silent or nearly so. About 15 were very active, filled with boiling mud, which was thrown up to a height of 10 feet. On all sides there was the hiss of escaping gas, the explosive pant of steam blown off through countless orifices, and the rumple and splash of the surging mud. Except for the persecuting "stock flies" and the flocks of water-fowl that flapped and shrieked along the shallow margins of the lake, the whole region seemed absolutely devoid of living things. The print of an Indian's bare foot across the plain startled me with the sudden amazement of a Robinson Crusoe. In the midst of the *salses* was a deep pool of warm water, on the edge of which had been built a rude booth of reeds and a pole ladder that led down into the hole. I tried the bath. It seemed scalding hot, but proved only 118° Fahr. Near by was another clear pool—hot, salty, and nauseating to the taste.

For at least 50 years, and we know not how much longer before Major Heintzelman's discovery, these *salses* have been boiling and ejecting, and the heat that lies beneath them and gives them rise will

not subside for many decades. The volcanoes are doubtless immediately due to the infiltration of water from the Colorado overflow down to the heated beds of rock not far beneath. Converted into steam, these waters burst violently upward through the deposits of silt, and around their orifices throw up encircling walls of mud. The heated condition of the rock formations below the surface would seem to be due to the great delta accumulations here, and would seem to support the mechanical theories of the origin of crustal heat.

COCOPAH WINTER HOUSE AND BASKET GRANARIES — WITH CORN GROWING ON GROUND RECENTLY INUNDATED BY OVERFLOW

From a photograph by the author

Throughout the desert the inundated country produces a most astonishing growth of grasses, wild hemp, and weeds. A variety of tumbleweed (*Chenopodium*) grows to a height of ten feet in a few weeks' time. For months of the summer thousands of acres of the so-called desert are transformed into luxuriant meadows. The Cocopah Indians, who live along the right bank of the Hardy, as well as on sloughs further east and on the lower Colorado itself, raise abundant crops of maize, beans, and melons from the naturally irrigated

soil. As the water slowly retires and leaves a margin of damp soil, the Indian breaks small holes with a heavy pointed stick, at intervals of a few feet, and in these deposits a few seeds. The moisture and excessive heat combine to produce a rapidity of growth that is astonishing. It is the veritable beginning of agriculture, and one may learn here how such cultivation arose in the valleys of the Nile and the Oxus. Two hundred and sixty years ago, when these Indians were first seen by whites, they were planting and harvesting precisely as they do today.

The great meadows of the overflow are utilized in summer and fall by American cattlemen. Thousands of head of stock are driven in as soon as the inundation comes. Below the line and along the Cocopah Valley I saw a magnificent herd of 1,600, the property of San Diego cattlemen, which had been thriving and increasing in that region for several years.

The care of cattle on the desert gives rise to an occupation as arduous and hazardous as exists among human employments. Cattle-punching anywhere in the West is not an easy life; here on the desert of the Colorado its trials and dangers are multiplied. Feed and water become scant in late winter and spring before the overflow arrives; deathly want and scarcity settle down over all the country; the starving cattle grow restless under the grievous want; then comes the overflow, and hundreds of square miles of desert clay become the stickiest surface on the face of the earth. The cattle, miserably reduced and weak, are unable to pull themselves out of the mud in which they sink continually in their efforts to reach food and water. One cannot appreciate what it is to have stock "bogging down" until one has seen them sinking by scores in the bottomless clay of this inundated country. From daylight to dark the cowboy must be in the saddle pulling these foundered cattle out with *riata* and pony. For weeks his skin is hardly dry and his person never free from the thick incrustations of fluviatile mud. Difficulties lessen as the cattle become nourished and grow stronger, but throughout the summer there must be constant watchfulness. These young fellows live on a diet of coffee, baking-powder bread, and jerked beef roasted in the flames. At night they lie down on the ground and seek sleep in the cover of a smudge of cow dung as protection against mosquitoes. The few rude utensils and the stock of grub are packed in cowhide *alforjas* on the backs of *burros*, and the camp is located under the shade of mesquite bushes in some dry spot along a slough, close by the restless herds of cattle.

THE CHINESE PARADOX

By Harvey Maitland Watts

With the envoys at Pekin relieved, the first shock of surprise over, the world naturally inquires as to what infatuate madness led the Manchu conspirators to invite the attack of the great Powers. To the Caucasian mind, familiar with the everyday fact of the puissance and resources of the civilized world when acting as a unit, such an outbreak as that which has concentrated the attention of both hemispheres on China for three months seems an impossibility. To the Chinese mind, however, the attack was the most natural thing in the world, since it was made inevitable, if not actually invited, by the strange paradox of China's diplomatic relations with the outside world.

Explanations of the anti-foreign uprising there are in plenty. Every promoter who has taken tiffin with a taotai, every worldling who has golfed it or played polo at Shanghai, every ex-diplomat who has found his somnolence destroyed by the importunities of the religious enthusiasts, cries out against the missionaries. Not to be outdone, the missionary and the humanitarian publicists the world over declare the material greed of the Powers themselves is the determining cause, and each nation in turn is accused of being the evil genius which added the final straw that was too much for the Chinese camel's back. All these things were factors, it is true, in irritating the Peacock throne, but the cunning determination to kick over the traces, to cast aside all international responsibilities, was due wholly to the fact that by reason of diplomatic errors and oversights in the past China was never brought to realize its true status before the world. To the Chinese mind, the Powers were not the invincible entities which we deem them, but weaklings who had only to be terrorized once and for all, when they would trouble the "Middle Kingdom" no more.

This attitude was the real cause of the uprising, and the Manchu conspirators were able to take this position by reason of the striking fact, the potent paradox of China's relations with the outer world, that while by grudgingly granted treaty China occupied the position of a third-class state whose sovereign rights were limited by the extra-territorial rights of foreigners on its own soil, by imperial etiquette, by official procedure at Pekin, by use of all the artifice of an oriental

court at once childish and devilishly ingenious, the Manchu government was enabled to reverse absolutely the relative position occupied by the Treaty Powers and itself, and was in a position to assume and did assume the attitude of a superior state dealing contemptuously and condescendingly with its feudatories. This anomaly, which the Powers would better never have endured, so paralyzed the exercise of diplomatic relations that normally subsist between great nations that the position of any envoy in Pekin was always more or less impossible, and any insolence on the part of the Chinese always possible; for, arrogant and ignorant as was the Manchu court, it would never have dared to attempt to wipe the slate clean had not Chinese officialdom implicitly believed that the Powers, which for 40 years had allowed their envoys to be treated in a manner beneath the dignity of the states they represented, would not interfere were a drastic anti-foreign movement carried to a bloody success all along the line.

However small Chinese sovereignty was writ at the treaty ports, at the capital it not only saved "its face," but by forcing Europe and America meekly to accept its own vainglorious fictions as to the world—supremacy of the puppet "Son of Heaven," gained a prestige far from empty, in which were infinite possibilities of evil. Advantage was taken of the complaisance of the Powers as to what they considered were non-essentials, but which to the Chinese mind were distinct renunciations of national rights. The envoy who left his home capital in conscious pride that in him was personified the greatness of the country he represented, and that he was the embodiment of a high civilization, woke up in Pekin to find that, though he was surrounded by the revolting sights and smells and discomforts of twelfth century barbarism, by the pervading tyranny of convenient etiquette he was classed as an inferior person and was obliged to carry on diplomatic relations under such social and official disabilities as to cripple his usefulness and paralyze his initiative. Amazed, disgusted, and disgruntled, "cabined, cribbed, confined," his only consolation was that all his associates were in the same boat and had got used to it.

That the present crisis is directly the outcome of this paradox in international relations, events prove. All other causes—religious, economic, political—are secondary. As the feeling of contempt which the position occupied by the envoys invited grew, the reactionaries became bolder, and when they were successful with the *coup d'état* of 1898 and found that western complaisance endured it, they planned

the present outbreak, ingeniously directing the anti-dynastic "Boxer" movement against the foreigners. That too much stress is not laid on this issue, that its significance is not overestimated, is shown by the astonishing fact, revealed in the latest British Blue Book on the Chinese difficulty, that on June 6 last, when the envoys finally realized the ominous situation that confronted them since the Tsung-li-Yamen had practically thrown off the mask, they wasted precious time by a futile discussion as to whether they had a right, not being ambassadors, to demand an audience with the government itself. The spectacle is not a pleasing one. They were the envoys of the greatest nations of the globe. Since January an anti-foreign movement had been gaining ground, connived at by the highest officials in province and capital, and secretly supported by the government itself. The complicity of the government was evident in March. Every member of the diplomatic corps knew he was dealing with an inept and irresponsible government, to which duplicity was second nature, which would only yield to force or the threat of it, and yet so tied up was each man by the red tape of diplomatic tradition that he hesitated over points of etiquette! So humble, indeed, were the ministers in the face of Manchu impudence that all that Sir Claude MacDonald in his terrible dilemma could suggest on June 8 to Lord Salisbury was this:

"There is a disposition on the part of the diplomatic corps to request an audience in order to represent the seriousness of the situation to the throne, but as yet I am not aware whether this step will meet the approval of Her Majesty's government."

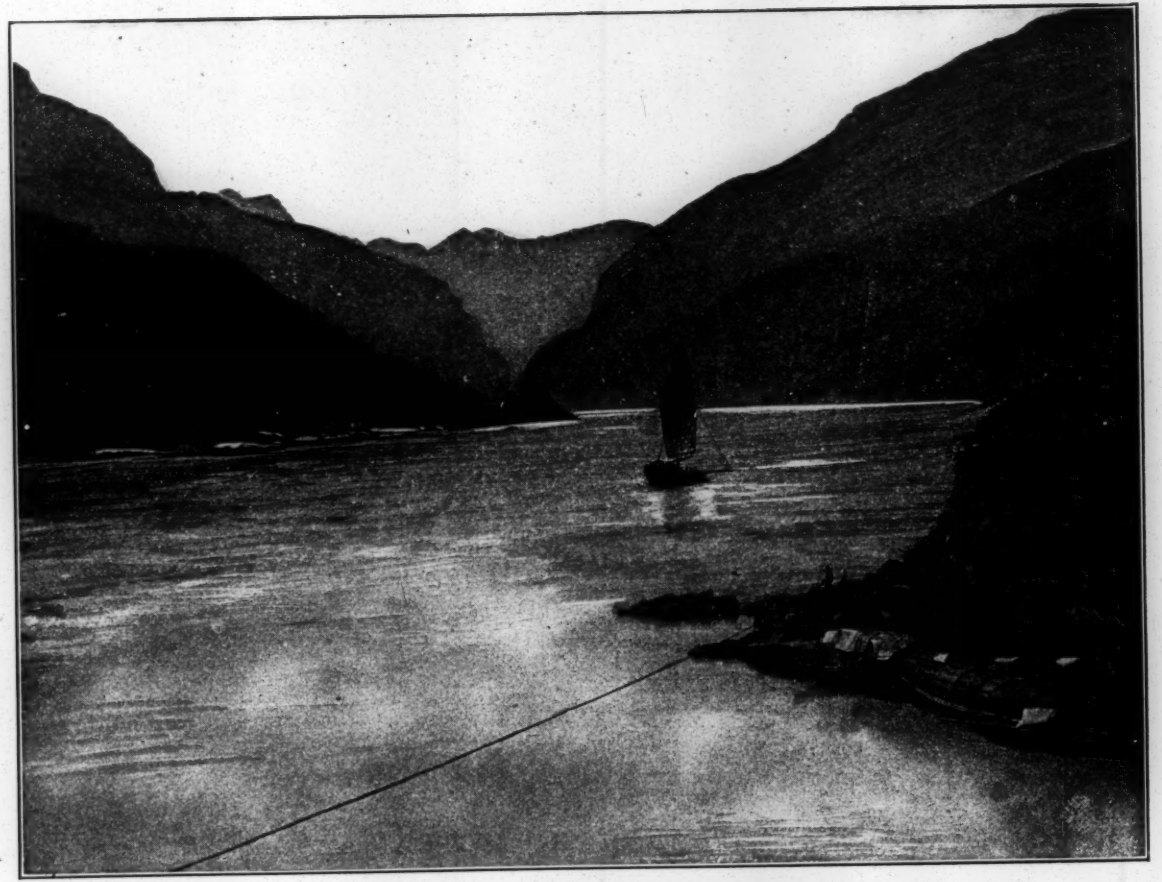
A day later the Empress and Tuan decided to kill the legationers; two days more and the women and children were huddled in the British legation compound, and within a week, consequent upon Seymour's failure to get through, the attack on the legations had begun. The envoys, in fact, could hardly have been more helpless had they actually been "tribute bearers from vassal states," as Chinese vanity has not hesitated to dub them. Their inaction, with its fatal consequences, was an echo of the past, and the home governments were equally easy-going. We now see that instead of frittering away precious time in June, all respect for the worn-out fictions of a conspiring piratical government should have been thrown to the winds, the issue faced, and the suppression of the anti-foreign movement demanded. Had this been done we should have been spared subsequent anxieties and the large outpouring of blood and treasure. But the tradi-

tional inertia of diplomatic conservatism that had existed since 1861 was too much for the ministers, and they hesitated, and Chinese diplomacy won the last throw and the reactionaries carried the day, fortunately, however, to their final rout when the might of the outraged nations was thrown against them.

As the Powers have hardly lost sight of the relative facts of the issues involved, this last outcome of 40 years of futile diplomatic attempt to live up to a vain make-believe will never be repeated. The elaborate superstructure of governmental pretense which had its habitation in the Purple Forbidden City has fallen as a house of cards, and cannot be set up again unless the Powers deliberately wish to undo the good work now under way. Whatever may be the final geographic adjustments, open or veiled, there must and will be an end of the diplomatic disabilities of the past. To be effective the readjustments of the foreign relations of China must be indicated by such a definite, unequivocal, visible demonstration of the actual dominance, the actual economic and political superiority of the western Powers, as to make an indelible impression on the imagination of the lay and official classes of China. It is the imagination that controls nations and peoples, and none have known this better than the very officials who under one pretext or another made patent to all Pekin the supposed subservience of the foreign Powers through the studied humiliation of the envoys. The long pupilage of the two boy Emperors, Tung-chi and Kuangsü, whose reigns are coincident with China's diplomatic contact with the West, played into the hands of the court, and hence made it difficult for the Powers to save themselves from a situation which has had its ridiculous as well as its tragic side. The peculiar relations that the nations put up with, it must be remembered, were first established in 1861, and it was not until 1873, after the envoys had been struggling for years with the newly organized Tsung-li-Yamen, purposely made an inferior board and assigned to service outside the walls of the Imperial City, that they were granted an audience with Tung-chi, then but 17 years old. At once the court officials raised the preposterous question of kotouing, though they knew full well no European or American minister would submit to such degrading abasement. Precedent was also against them, as Lord Macartney as far back as 1794 refused to perform the ceremony, and no European in modern times, save the easy-going Dutch in 1664, had yielded this point. No Manchu official expected they would in 1873, but broaching the matter was a part of

their diplomatic game, and, beaten in this, they got even with the Powers, as they view it, by receiving the envoys in the Hall of Tributary States, outside the royal palace.

Again, after Kuangsü came of age and an audience was agreed on in 1890, so little did the Chinese care for the facts of the case that the same hall was used, and, the ceremony being made even more belittling to the dignity of the envoys, they determined as a body never to submit to the imposition again. A few private audiences were held consequently under better conditions in the following years, but it was not until the Japanese war, in 1894, had pricked the Chinese bubble and had driven home a few needed lessons that the imperial government yielded its childish pretensions and received the envoys in the palace itself. The Powers, however, let the humiliation of the intercourse through the Tsung-li-Yamen continue, confirmed Chinese insolence by yielding continually until the collapse of 1898 and the succeeding intrigues—the flat refusal to lease Italy Sanmun Bay in March, 1899, though Italy's demand was supported by Great Britain, being the turning point—convinced the party of the Empress Dowager that it need not fear either united or determined action on the part of foreigners. Consequently the Manchu conspiracy, which had been under way for two years, came to a head in June, to the surprise of the very chancelleries that practically invited it and to the discomfiture of the envoys. Though revealed in imperial decree and forecast in political changes, when the crash came they sat helpless because there was no Gordius to cut the entanglements of the idle ceremonies by whose foolish fetters they felt themselves inextricably bound. They forgot that a paradoxical situation is never so mischievous as when those who know the falsity of its apparent relations accept the surface fact as final. But all this is past, and the Chinese paradox goes to join the august collection of exploded physical and political notions that had their day of evil obsession, but finally yielded to nineteenth century science and nineteenth century sense.



IN THE GORGES OF THE YANGTZE

From Commander Harrie Webster's collection of Chinese pictures

ONE OF THE MAIN AVENUES OF SHANGHAI

From Commander Harrie Webster's collection of Chinese pictures

COLONIAL GOVERNMENT IN BORNEO

By James M. Hubbard

It is now more than sixty years since there landed in Borneo a young missionary—not of the Gospel, but of good government. While voyaging in the Indian Archipelago in 1830 he was deeply impressed with the fact that these islands of unequaled beauty and natural resources were peopled with savages continually at war with each other and carrying on piracy on a vast scale. He determined to rescue some of them, if possible, from their barbarism by teaching them to respect and appreciate the value of law and order. And now, nine years after, he had come in a yacht, with a crew of twenty men, to carry out his Quixotic purpose. The time was apparently inopportune, as a rebellion of the Dyaks was in progress, but he offered his aid to the Sultan, and as a reward for his services was made Rajah of Sarawak. His first task after establishing his power was to reform the methods of government, to prepare a code of laws, and to develop commerce as the most effectual means of putting down piracy. He endeavored to make his native subjects understand that the main object of his government was not the commercial exploitation of the country or the amassing of colossal revenues, but the preservation and well-being of the people themselves; that their ruler would be a terror only to the disturbers of the general peace and to the enemies of the commonweal.

How has this strange experiment in ruling men of a low type of civilization succeeded? In attempting to answer this question I will not review the history of Sarawak since 1842, but simply describe the work of one of Sir James Brooke's successors.*

Charles Hose entered the Sarawak civil service in 1884 as extra officer in the Baram district, which had very recently been ceded to Brooke by the Sultan of Brunei. In 1890 he was made Resident, a post which he now holds. The district is about 10,000 square miles in extent, with a population probably not far from 100,000, and the governing staff consists of the Resident and an assistant magistrate—the only white men in the district—and about 20 or 30 Dyak "fortmen" or police. His principal executive duty is to put down murder,

* My information is derived from a paper read before the Royal Geographical Society last March and published in the *Geographical Journal*, and the remarks made upon it by Professor Haddon, the head of the Cambridge Anthropological Expedition which visited Borneo in 1898.

head-hunting, and theft. "If any of the interior tribes do a little head-hunting," says Professor Haddon, "Mr Hose starts away by steamer as far as it can go, then takes to canoes, and when he reaches the people he simply talks to them. They usually give themselves up or pay their fines—400 to 500 dollars for a life taken. What surprises the natives is Mr Hose's activity. He never loses a moment; when there is difficulty he rushes up at once with only a few 'fortmen'; still the people feel that he is a man they cannot tamper with and they give in. It is moral rather than physical force. The people who in the past were inclined to give the greatest trouble are at the present day the staunchest upholders of the government."

His chief aim, however, is "to bring peace to communities whose normal condition was one of mutual hostility." With this end in view he made a journey in 1898 to a hitherto unexplored part of his district to bring about friendly relations between his people and a tribe, the Madang, who have from time immemorial been at enmity with them. When he reached their principal village, consisting of nine long houses, with some two thousand inhabitants, he immediately accepted an invitation to stay with the chief, although accompanied only by hostile natives. These could not enter the houses until all the cases of blood-money had been settled between them. After long negotiations, during which "two men messengers were sent backwards and forwards to discuss the numbers of people killed on either side from time to time, and big gongs, shields, and weapons of all kinds changed hands as blood-money," peace was concluded. At a feast given on the following evening there were "some very good speeches made, their former troubles and differences being explained and discussed in the most open manner. Each chief spoke in turn, and concluded by offering a drink to another and singing a few lines of eulogy, the whole assembly joining in a very impressive chorus at the end of each line, and ending up with a tremendous roar as the bamboo cup was emptied."

The next day the Madangs collected a quantity of rubber for their first payment of tribute to the government, namely, two dollars per family. As there was no means of weighing it, they decided that the leader of Mr Hose's escort and two Madang headmen should act as assessors, and determine whether the piece of rubber brought by each person was sufficiently large to produce two dollars.

"It took these men," says Mr Hose, "the whole day to receive it all, and much counting was done on the fingers and toes. I would

mention that their method of counting is as follows: Some one mentions the names of all the families in each house, and as he does so a man tells each name off on his toes; when five have been counted, another man catches hold of the counted foot, and so on until his feet and hands have all been told off, when another man is used, and this continues until all the names are mentioned, when they halt to see how many men have been used, and where the last one ended." This extraordinary willingness to pay tribute on the part of savages who had never before seen a white man is noticed by Professor Haddon, who says that they pay it "because then they can feel that they are citizens of the Raj, they really do belong to the government, and barbarians are by no means fools. They know well that by paying two dollars a year they will have peace, be able to trade, and have all the advantages of a settled government, and they feel it is really a good investment for their money."

Before leaving, Mr Hose arranged for a similar peace-making between the Baram and Madang chiefs at his official residence, Claudetown. This was done soon after, six thousand natives being present. At one of the meetings a Madang chief "made a very eloquent and remarkable speech, in which he explained that his people had for years been compelled to fight on all sides in order to hold their own, but were now fully able to appreciate the benefits of peace under the Sarawak government and of friendly intercourse and trade with the peoples of the Baram and surrounding districts—a condition of things which he would do all in his power to strengthen." The substantial outcome of this peace-making and the proof of the chief's sincerity was that last year 200 Malay traders went among the Madangs, who had collected large quantities of jungle produce, "and these very people, once so hostile to all, are now being used as a means to bring about friendly relations between our people and the border tribes." As Professor Haddon says, the barbarians are no fools, and native chiefs in the neighboring Sultanate of Brunei have time after time asked Mr Hose to persuade the Rajah to take over their territory, and natives living in Dutch Borneo, seeing how the people of Baram can live in peace and safety, are coming over the border in order to put themselves under the administration of Mr Hose. A few months ago he received a message from the principal chief of one of the most important border tribes, accompanied by a clod of earth, symbolizing the identity of his people with the races of the Baram. "The message he sent (translated literally) was to the effect that his people

were really the same as the Baram people, and that they were on the same soil. They had been divided and made enemies on account of mistakes and the foolishness of unimportant headmen, but he was anxious to meet the Baram people and glad to make peace. He intended visiting us at Claudetown, and if the Baram people wished to trade with the inhabitants of his district, he would be responsible for the former's safety during their sojourn in the Batang Kayan."

The secret of this splendid and almost unexampled success in ruling a savage race is to be found in the fact that "the confidence of the natives has been won and retained by an unbroken record of promises fulfilled and benefits bestowed." Thus they have been educated into the belief that the single aim of their white rulers was their welfare. "Since that belief was firmly established, native public opinion," to use Mr Hose's words, "has always been on the side of the government, and it is on the moral force of that public opinion that the whole framework" of Sir James Brooke's system of government rests. It should be said that the personal influence of the Resident is also an important factor in his success. He speaks six or seven of the Malay dialects—an important matter, for "you can never get at a man's heart if you speak through an interpreter." Professor Haddon testifies to his "wonderful energy and enthusiasm for the natives." He knows personally the greater number of the people of his district. Many come to him with their troubles. "Time after time promising young natives come down on a visit to Mr Hose and stay with him for days or weeks at a time, and in this way the people learn what a white man, a respectable white man, is like and what a government really means. Thus Mr Hose's residence is a sort of university, whither the pupils come from all parts of his district to learn a little as to the meaning of government."

Nor while attending to his official duties is he neglectful of other interests. He has prepared an admirable map of Baram District which has just been published by the Royal Geographical Society. Dr Bowdler Sharpe speaks, in behalf of the British Museum, of the "extraordinary efforts to advance science that have characterized Mr Hose's residence in Borneo. He has crowded into our museum enormous series of mammals, birds, insects, shells, and every kind of animal. Not only has he given to the British Museum the first fruits of his work during his sixteen years' residence in Borneo, but there is not a leading museum in the whole world that has not received collections from this indefatigable young man, second only to those given

by him to the British Museum, and these donations have proved of great importance to the countries he has benefited.' We may add also that this kind of government pays from the lowest material point of view. In 1898 the value of the total trade of the country was $9,174,898, a gain of over 130 per cent in ten years, while the government balance-sheet showed a surplus of $94,682.12.

Charles Hose is the type of ruler over races inferior to the white in intelligence and civilization which England has been assiduously educating for the past hundred years, and it is to her success in this education that the extent and stability of her tropical empire are due. This country is about to undertake to rule people of a similar race and characteristics to those in Borneo. We must raise up men like these Englishmen—men who will found a government of the people for the people supported by public opinion—or we shall fail as utterly as the Spaniards have done.

THE WATER SUPPLY FOR THE NICARAGUA CANAL

By Arthur P. Davis,

Hydrographer of the Isthmian Canal Commission

In the *Scientific American* for February 24, 1900, appears an article by Professor Angelo Heilprin, entitled "An assumed inconstancy in the level of Lake Nicaragua: a question of permanency of the Nicaragua Canal." This article purports to show, from old observations as compared with more recent ones and from theoretic considerations, that the level of Lake Nicaragua has very materially declined within recent years. A very conclusive reply, from a geological standpoint, by Dr C. W. Hayes, was published in the National Geographic Magazine for April, 1900.

In the *Scientific American Supplement* for May 19, Professor Heilprin rejoins with another article, in which he dismisses the arguments of Dr Hayes as insufficient, and attempts to show, from the observations published by the Nicaragua Canal Commission, that, independent of these arguments, the lake has declined 20 feet and 9 inches in level within the last nineteen years. To arrive at this conclusion, Professor Heilprin employs several assumptions in addition to the actual observations taken by the Commission. He gives a table, presumably based upon the report of the chief engineer of the Nicaragua Canal

Commission, page 65, showing a rate of inflow to Lake Nicaragua corresponding to the recorded rainfall at Rivas. This table was constructed by the chief engineer upon an assumption made by me and expressed as follows:

> While we have no conclusive data upon which to estimate the percentage of run-off to rainfall in the basin of Lake Nicaragua, it is well established as a general rule that in any given basin the greater the rainfall in a given time the greater the percentage of run-off, so that if the rainfall were increased 21 per cent the run-off should be increased somewhat more, say 25 per cent.—*Report Nicaragua Canal Commission*, page 295.

It will be seen that this is a mere assumption adopted for the want of any actual data, and, as should always be done in such cases, it is made on the side of conservatism, for the purpose of comparing the rainfall of 1898—the only year for which we have records of the fluctuations of the lake—with other years. If, however, this assumption should lead us into obvious absurdity, it should be modified or rejected, but up to the present time this necessity has not appeared.

The second assumption is that the Rivas rainfall is reliable and bears a reasonably uniform relation to the rainfall and run-off in the basin of Lake Nicaragua. This matter was discussed by me in the Report of the Nicaragua Canal Commission, page 297, where it is shown that the fluctuations are greater in quantity than is usual in other parts of the world, so that if this record is in error, it also is probably on the side of conservatism.

Professor Heilprin's third assumption is that the outflow from Lake Nicaragua in the seventeen years from 1880 to 1896, inclusive, averaged 42 inches per annum. This assumption is entirely gratuitous, apparently with no basis whatever, and, together with his table quoted from the chief engineer, leads Professor Heilprin to the astounding conclusion that the lake has declined 20 feet and 9 inches in nineteen years, or 249 inches. To reach this conclusion he has assumed a total outflow in that time of 798 inches, or 549 inches more than the alleged decline of the lake. A conservative estimate of the water required for the use of the canal is given on page 66 of the report of the Commission, showing that a liberal allowance for leakage, lockage, and power requires three inches annually from the surface of Lake Nicaragua, or a total of 57 inches for the nineteen years. When the canal is constructed provision will be made for storing the run-off from Lake Nicaragua so far as necessary, and Professor Heilprin's own figures show that 549 inches will be available where only 57 are required,

leaving 492 inches as a margin of safety. This is a coefficient of safety of about 9½, which ought to be regarded as exceedingly liberal.

As an actual fact, no one knows what was the discharge, either maximum, minimum, or mean, from Lake Nicaragua prior to 1898. We do know, however, that the San Juan River has been navigated for a period much longer than the Rivas rainfall record, and that always, within the last generation or more, it has been necessary to transfer freight over the rapids during the dry season and unnecessary to do this during the season of high water. These facts are based not only upon the testimony of such intelligent men as Hon. W. L. Merry, former superintendent of the transit company and now United States Minister to Nicaragua and Costa Rica, but upon the existence of the light-draft steamers and lighters used for these purposes at that time, which fully bear out the testimony that the regimen of the San Juan River, and therefore of Lake Nicaragua, has not materially changed within the memory of men now living.

If the conclusions drawn by Professor Heilprin are correct, Lake Nicaragua has been only a short time at its present stage, but in this alleged short time it has made a very marked and decided beach throughout the extent of its western coast. How, then, did it manage to leave absolutely no record of its stage twenty or thirty years ago?

But the crowning absurdity involved by Professor Heilprin's theory is that the old Spanish fortifications at Grenada, the wharf, warehouses, and a part of the city, as well as several villages and hamlets around the lake, must have been all constructed under water, since they are now less than 20 feet above the lake level.

It is a curious fact that, in order to clinch his argument and show that there is no probability of a recurrence of very wet years to make good the alleged loss from the lake, Professor Heilprin triumphantly quotes from Dr Hayes as follows: "So far as known, there is no evidence whatever that the rainfall has ever been greater in this region than it is at the present time." This quotation is employed at the close of an article which purports to show conclusively that the water supply to Lake Nicaragua *has* very greatly declined within a generation, and that therefore there *is* conclusive evidence that the rainfall has been greater in this region than it is at the present time.

MRS BISHOP'S "THE YANGTZE VALLEY AND BEYOND"*

By Eliza Ruhamah Scidmore

In these two volumes Mrs Bishop relates incidents of her travels in China during the years 1896 and 1897, including visits to Shanghai, Hangchau, and Ningpo, and along the regular tourists' route up the Yangtze to the head of steamer navigation and the Gorges. Mrs Bishop pushed on beyond this scenic region to Chingtu in Szechuen province, and from that western center went on to the wild mountain region to the northwest of it, where she encountered the mysterious Man-tze, people of another race, differing from the Chinese entirely, some forgotten Aryan offshoot. At this furthest interior point this intrepid woman-traveler traversed a district where no European had ever gone before, even the ubiquitous Jesuit missionary not having visited those villages.

It is a record of the direst discomforts and hardships that any woman ever deliberately encountered and willingly endured. The wonder grows, as one reads, that she should have remained in the province, should have followed her itinerary to the end, as she had planned it. Only escape from prison, or from an enemy's country in war time, would seem warrant for such repetitions of fatigue and exposure, with the barest necessaries of subsistence, under the most revolting conditions. For months Mrs Bishop slept in the worst rooms of the worst of Chinese inns, often adjoining and over the pigsty, and sometimes in it, and always obliged to take every precaution against the vermin swarming and the filth dripping from every side. Privacy, quiet, cleanliness, proper food, and baths were as impossible for her as for the Chinese, who have no need or longing for such luxuries. Often she went shivering to bed in wet clothes, often the roof leaked and storms blew in upon her, and once she went to bed when the winds and drafts in her bedroom blew out the candle. Tea and a bowl of wheat flour stirred up in boiling water constituted her breakfast, cold rice or a nibble of chocolate her luncheon, and dinner was a modest course of rice with curried meats or chicken. She lived on this fare during the months spent in small native boats and in a chair borne by coolies over the busy roads of Szechuen. Mrs Bishop did not travel in the conventional closed sedan chair of the country, but rode in an ordinary wicker armchair fastened to poles, as is shown in one of the illustrations.

When she discovered that such open travel was contrary to etiquette and custom, attracted unpleasant attention, and left her at the mercy of street crowds and mobs, Mrs Bishop did not abandon it, but valorously continued to run dangers the ordinary male traveler might avoid. Every indignity and discourtesy was put upon her by her boatmen at the start, and continued by coolies and street crowds throughout Szechuen province. All of Chinese rudeness, hostility, brutality, and insult was vented on this quiet, kindly disposed

**The Yangtze Valley and Beyond.* By Isabella L. Bird (Mrs Bishop), F. R. G. S., author of *Unbeaten Tracks in Japan, A Lady's Life in the Rocky Mountains, The Hawaiian Archipelago*, etc. With map and 116 illustrations from photographs by the author. 8vo, 2 vols., pp. 410, 365. New York: G. P. Putnam's Sons. $6.00.

traveler, but, although often disenchanted, she did not turn back nor abandon any part of her contemplated tour. As she wore Chinese woman's dress, with a Japanese jinrikisha coolie's hat, and European russet leather shoes under straw sandals, she naturally attracted attention and drew crowds of the curious; and Chinese mobs, not respecting her sex or her gray hair, pursued her savagely at times. "Child-eater" and "child-stealer" were the names shouted most often, and the cries of "Kill her!" and "Burn her!" were voiced in many a Szechuen city. Twice the mob pursued her into hiding places, pried open and battered down the doors, and Mrs Bishop had often to sit in some dark and noisome hole, revolver in hand, waiting for the last moment to come. Once a stone struck her and left her senseless and bleeding in her chair, and she suffered the effects for many weeks. Chinese officials tried to discourage and prevent her visiting remoter Szechuen, but she pushed on and on, into more hostile regions, encountering fresh assaults, more discomforts, hardships, filth, and horrors of every kind. The true traveler's spirit seems to have possessed her, and one would hardly look for greater zeal in a missionary seeking martyrdom for the sake of spreading the faith, or in an explorer who had happened upon an unknown country, discovered a new race, or found mines of fabulous richness. Marco Polo, Abbé Huc, and many travelers have written of the Szechuen country and the borderland of Tibet, but Mrs Bishop's narrative is the latest and a most interesting one, and she repeats all their praises of the scenery and fertility of that province.

Trade problems and statistics are woven in with the narrative, and as Mrs Bishop was everywhere the guest of the missionaries, one has a very clear picture of the mission work that is carried on in the far interior under conditions that would discourage any but the truest, most earnest Christians. She speaks encouragingly of the progress and results of mission work, and her testimony is the ablest and most appreciative that can be offered. Mrs Bishop struggles earnestly to make out a good case for the Chinese, to prove them a great and admirable people; but some of her experiences were too much for her plan of praise, and her readers easily understand when she says: "China, with its crowds, its poverty, its risks of absolute famine from droughts or floods, its untellable horrors, its filth, its brutality, its venality, its grasping, clutching, and pitiless greed, and its political and religious hopelessness, sat upon me like a nightmare." One follows less easily when she alludes to "a certain loveableness about the people"—the repulsive people, whose lack of all kind or admirable traits is shown so clearly in her daily life of travel.

After one frightful experience at the hands of a mob, Mrs Bishop complained that "these rows are repulsive and unbearably fatiguing after a day's journey, and always delayed my dinner unconscionably, which, as it was practically my only meal in the day, was trying." Also, "The mannerless, brutal, coarse, insolent, conceited, cowardly roughs of the Chinese towns, ignorant beyond all description, live in a state of filth which is indescribable and incredible, in an inconceivable beastliness of dirt, among odors which no existing words can describe. I wondered daily more at the goodness of people who are missionaries to the Chinese in the interior cities, not at their coming out the first time, but at their coming back, knowing what they come to."

Again says Mrs Bishop: "When night came, and I sat shivering in some fetid hole, not fit for a decent beast, with only a bamboo railing between it and the pigsty, I often thought Chinese traveling an utter abomination." And her readers fully agree, wondering the more with each page and chapter that Mrs Bishop should have remained in the midst of such abominations, when not driven and held to it by any vow, or contract, or obligation—enduring it all voluntarily, traveling in such ways, in such well-beaten tracks, for pleasure and interest only. "The interest of mixing in any fashion with the people far outweighed the discomfort of peasant accommodation, even when it was pretty bad," she says, and then mentions that "seven pigs occupied a depression railed off in one corner" of the room she occupied that night.

One has to regret that Mrs Bishop's literary skill should be spent upon such unpleasant subjects, such repulsive people and incidents, for the pictures are all too clear and realistic. Mrs Bishop saw with the keen, trained eye which notes and grasps every feature and detail, and she puts it before one as a strong, sharply cut photographic print. Every extenuating circumstance is made the most of for the benefit of the brutal, insolent people; not a tree, plant, or flower escaped her, and the rocks, and stones, and soil were equally observed. There was magnificent mountain scenery as she went further west toward the snowy range, and her descriptions are charming, full of color and vivid reality. The cost of this independent travel was not great, seven shillings a day being the average of chair travel and wayside accommodations. Everywhere she encountered poppy culture and opium smoking, and the chapter devoted to the opium poppy at the end of the narrative is one of the most interesting in the book. Mrs Bishop at the close expresses the kindest and most hopeful sentiments for the Chinese, doubts that the break-up or the decay of the empire has come, and sees some hope of the awakening of this enigmatic race.

THE city of Shanghai is of nearly the same latitude as Mobile, Alabama, Morocco, and Alexandria, Egypt, and in climate and luxuriance of plant life much resembles these western cities. The town lies at the southeastern end of a wide plain, the Kiangsu province, which has often been described as "the garden of China." In the variety and wealth of its fruits and vegetables it is not unlike southern California. From the neighboring fields, rice, grain, and cotton have been the principal crops, but of late the demand for cotton and the good prices offered for that staple by the mills recently built at Shanghai by foreign capital have induced the farmers to give up the cultivation of rice and grain and plant cotton instead. Shanghai is the commercial center of the most densely populated section of the empire, 500 to 800 inhabitants to the square mile being a fair estimate of the density of the population. The imports in 1898 of this city reached $90,000,000, thus exceeding in value the entire imports of the rest of the empire. Canals, rivers, and creeks, penetrating in all directions, converge toward Shanghai, affording easy communication for hundreds of miles. Twenty-five years ago the river opposite the city was about 1,800 feet broad at low water, but today cannot exceed 1,200 feet. The depth of water on the bar, averaging only 19 feet and rarely reaching 23 feet, causes much loss to shipowners because of the detention of steamers.

FOREST RESERVES OF THE UNITED STATES

In the United States today 70,761 square miles of territory—that is, an area considerably greater than the combined area of the six New England states—have been dedicated by Congress for forest preservation. Most of this land is rugged and mountainous, and hence of little value for cultivation, but especially fitted for tree growth. The splendid work being done by the U. S. Geological Survey to determine the resources of the Forest Reserves is graphically described in the recently published official reports for 1897–'98 and 1898–'99 of Mr Henry Gannett, Chief of the Division of Geography and Forest Reserves of the Survey.* Of this immense area, wild and in places almost inaccessible, more than one-half has been scientifically explored. The density of timber, the variety of wood, the amount of merchantable timber, the burned areas, the land reforesting and the land on which trees are not springing up again, the quality of the soil—all these and many similar facts that must be ascertained before the reserves can be properly developed have been carefully examined and noted. The condition of woodlands in different states has also been investigated. As a result many impressive facts have been gathered.

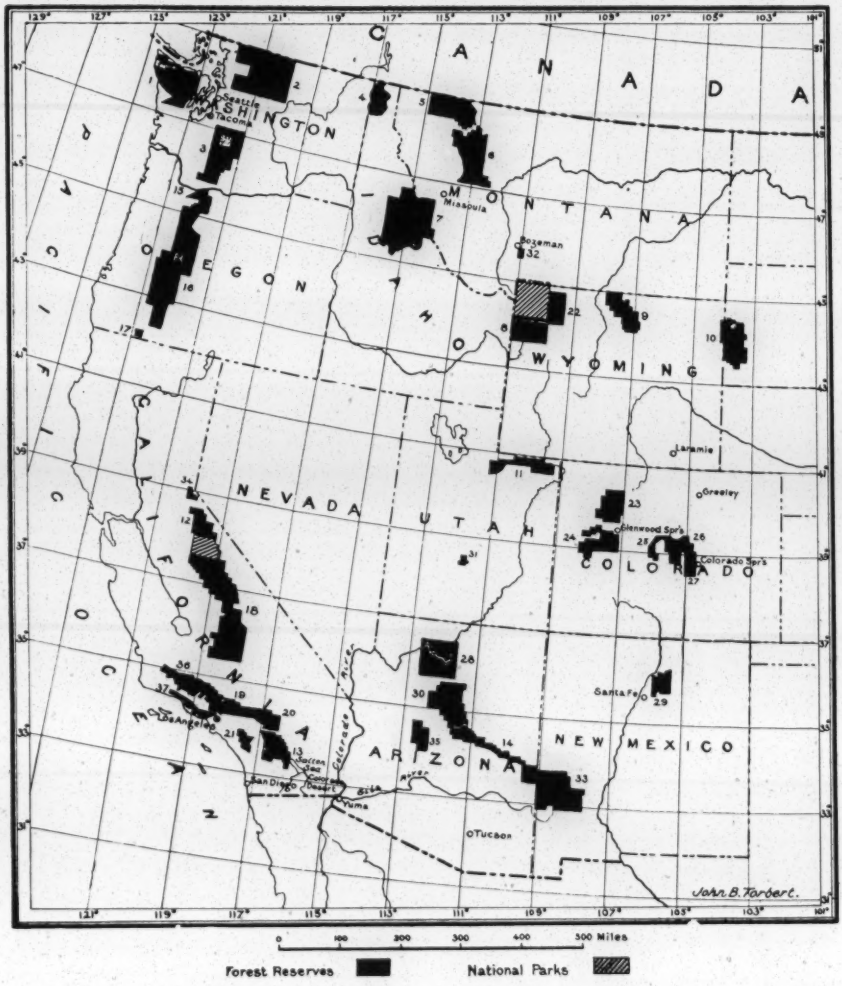
In the state of Washington the forests are among the densest, heaviest, and most continuous in the United States. The trees have a thickness of 12 to 15 feet, and are, as a rule, 250 feet high, their trunks often shooting upward for a hundred feet without a branch. Mr Gannett estimates that since lumbering began in the state 36,000 million feet B. M. have been cut; but within the same period, or less than a generation, 40,000 million feet B. M. have been destroyed by fire. Thirty million dollars have thus been lost to the people of the state.

The report for 1898–'99 forms a sumptuous volume of 498 large octavo pages, handsomely illustrated with 200 pictures from photographs. Twenty-seven maps of the different reserves and, in a separate pocket, eight larger maps, show by gradations of color the classification by land, etc. In addition to the general report of Mr Gannett, there are included special papers by John G. Jack, George B. Sudworth, H. B. Ayres, and John B. Leiberg. A more detailed review by Mr Gifford Pinchot of the volume for 1897–'98 follows.

Perhaps the most notable forest publication of recent years is the fifth part of the Nineteenth Annual Report of the U. S. Geological Survey. This volume is the first fruits of a study of the national forest reserves that has been conducted by the U. S. Geological Survey since 1897. It contains, besides special reports on ten reserves and a note on the timber of Pine Ridge, Nebraska, an article on "The Forests of the United States," by Henry Gannett, Chief of the Division of Geography and Forestry, under whose direction the work has been carried out. It is with Mr Gannett's article alone that I wish to deal in this note.

* *Nineteenth Annual Report of the U. S. Geological Survey, 1897–'98.* Charles D. Walcott, Director Part V. Forest Reserves. By Henry Gannett.

Twentieth Annual Report of the U. S. Geological Survey, 1898–'99. Charles D. Walcott, Director. Part V. Forest Reserves. By Henry Gannett.



No.	Name.	Area in sq. miles.
	Afognak (Alaska)	
17*	Ashland	29
24*	Battlement Mesa	1,341
9*	Bighorn	1,762
7*	Bitterroot	6,480
10*	Black Hills	1,893
14	Black Mesa	2,592
15	Bull Run	222
16†	Cascade	7,020
31	Fish Lake	106
5*	Flathead	2,160
32	Gallatin	63
33	Gila	3,636
28	Grand Cañon	2,893
34	Lake Tahoe	213
6*	Lewis and Clarke	4,572
3*	Mount Rainier	1,655
1†	Olympic	3,006
29	Pecos River	673.5
27*	Pikes Peak	288
36	Pine Mt and Zaca Lake	2,569.6
26*	Plum Creek	280
35	Prescott	662
4*	Priest River	1,008
20*	San Bernardino	1,152
30	San Francisco Mts.	1,524
19*	San Gabriel	868
37	Santa Inez	227
13*	San Jacinto	1,152
18	Sierra	6,400
25*	South Platte	1,068
12*	Stanislaus	1,080
8*	Teton	1,296
21	Trabuco Cañon	78
11	Uinta	1,368
2*	Washington	5,616
23*	White River Plateau	1,872
22†	Yellowstone	1,936
	Total	70,761

* Examined by U. S. Geol. Survey. † Examined in part by U. S. Geol. Survey.

Since the publication of Sargent's monumental volume in the Tenth Census and the gradual but inevitable recognition of the fact that his results were by their very nature subject to extensive revision, estimates of forest area and of standing timber in various portions of the United States have been frequently repeated. So far as the present writer is informed, a very large majority of these estimates have been altogether guesswork. Mr Gannett's paper, on the contrary, is based on a complete compilation of the available facts. We have here a statement of the wooded area and merchantable stand of timber in the United States based on definite sources of information. A remarkably skilful use has been made of old data and an immense amount of new information, supplied to Mr Gannett either by his own fieldmen or by railroad companies and other holders of timber lands, is now published for the first time. The use of the old and new together has rendered possible what is by far the best statement yet made of the forest condition of the United States.

Under the head of "Wooded Areas, by States," following a brief introduction, there is given an admirable summary of the total land area and the total wooded area of each state, with a statement of authority in every case. These figures show that the United States has now 37 per cent of its total area in wood, or, in round numbers, a million square miles. Contrasted with previous estimates, which have usually been about 25 per cent, this estimate is extremely satisfactory.

It is unfortunate that the description of the merchantable standing timber in the United States cannot be made as complete as that of the area of woodland. Mr Gannett has compiled, however, all the information which has been gathered, and the result is a table of the first interest. There follows a discussion of the consumption of timber, which reaches an annual value of about $800,000,000, an amount slightly in excess of the mineral production of the country. The enormous progress of the lumber industry in the northwest is illustrated in a tabular view, which indicates that in 1870 the value of the lumber product of Washington was worth about $1,000,000; in 1880, about $2,000,000, and in 1890, about $15,000,000.

Mr Gannett's paper concludes with synopses of the reports included in the volume, of which those on the forest conditions in the states of Washington and Oregon are especially noteworthy. To reach an estimate of the stand of timber in the former state, Mr Gannett made or collected and compiled actual timber cruisings of more than a million and a half acres, and is consequently in possession of a body of facts altogether without parallel. He gives tables of the stand of merchantable timber, the logged area, the naturally bare area, and the burned area, together with definite figures for the stand of timber for each of the timber counties. A summary of these tables shows that more than 114 billion feet are now standing. Another most significant result is that within recent years 20 per cent of the merchantable timber of the state has been burned, or enough to supply the whole United States for two years. In Oregon the timber area is larger and the stand per acre heavier on the average than in Washington, the actual merchantable stand being estimated at 235 billion feet. Fires have been but little less destructive here than in Washington.

The value of Mr Gannett's report consists as much in its method as in its

matter. Here is a statement of definite facts and of conclusions drawn from them in clear and simple words, marking a new step in the statistics of forests in this country. Undeterred by the evident paucity of information, and with a degree of skill of which I cannot speak too highly, Mr Gannett has given us the best there is in the most practical form. He has had the coöperation and assistance of an admirable corps of men in his own division, of whom Graves, Sudworth, Ayres, and Leiberg are of national reputation in forestry, but he has succeeded in obtaining results from other sources so extensive that without them his work would have been altogether impossible. To the men who have supplied these results, and especially to Mr Thomas Cooper, of the Northern Pacific Railway, it is but fair to acknowledge our debt.

GIFFORD PINCHOT.

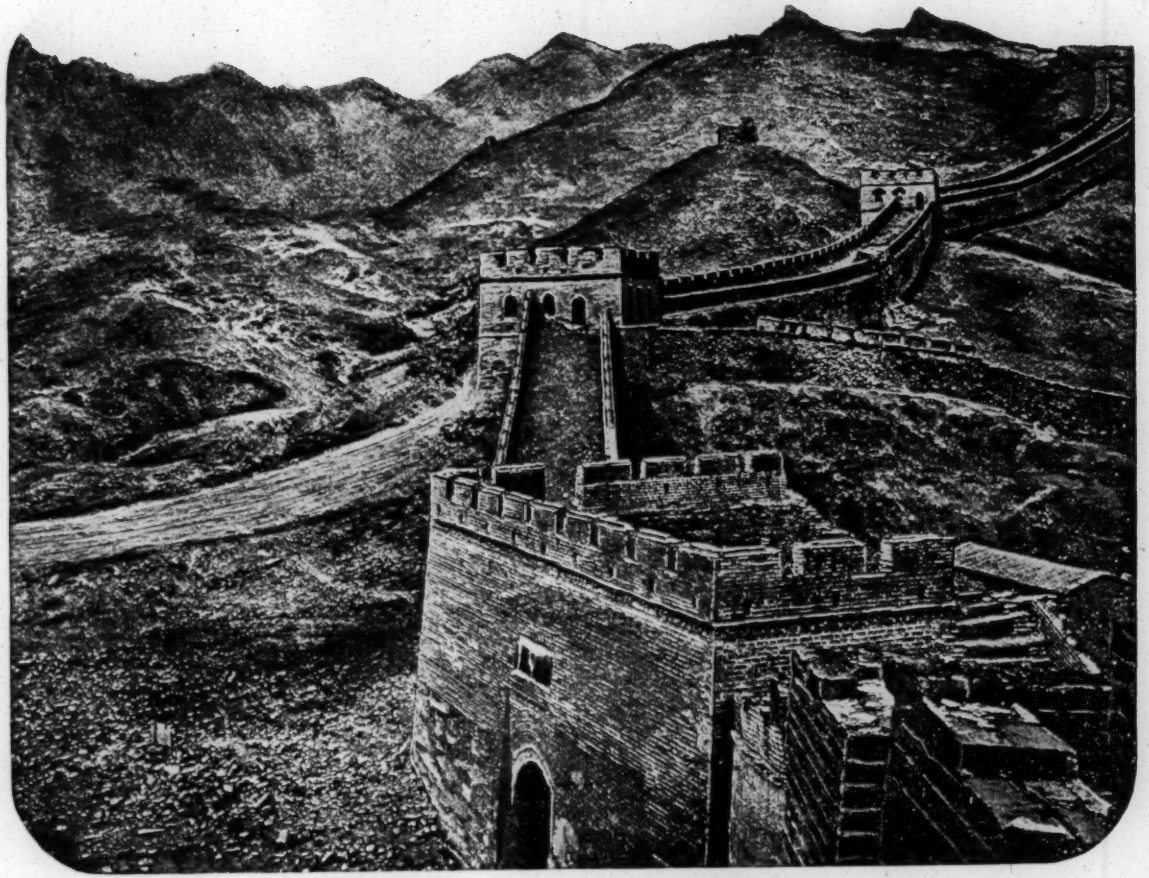
THE GREAT WALL OF CHINA*

The great wall of China was built at a time when the wild tribes of north-eastern Asia were pressing forward into the lowlands, whither their kinsmen had gone centuries before. It most probably consisted originally of a line of detached earthworks, which some able ruler or captain strengthened and connected so as to present an unbroken line to the public enemy. It is said to have been finished 205 B. C. by Tsin Chi-Hwangti, and to be nearly 1,600 miles long. The Chinese call it the "Ten-thousand-li wall," and if it really had any such length, it would be something over 3,500 miles long.

It is from 25 to 30 feet high, 15 to 20 feet thick, and revetted, outside and in, with cut-granite masonry, laid in regular courses, with an excellent mortar of lime and sand. It is surmounted by a parapet or battlement of gray burned brick 18 or 20 inches thick, covered with moss, and pierced with crenelated openings for the defenders, whether archers or matchlockmen, to fire through. The rear or inner revetment wall is also furnished with a lower parapet, but it is not crenelated. The top is paved with a double layer of brick about a foot square. The inside of the wall is made of earth and stone well rammed in. Every 200 or 300 yards there is a flanking turret 35 or 40 feet high, projecting beyond and overlooking the face of the wall in both directions, and near each turret is a stone staircase leading down between the walls to a door opening upon the ground to the rear.

The most astonishing thing about it is, however, that it climbs straight up the steepest and most rugged mountain sides, courses along their summits, descends into gorges and ravines, and, rising again, skirts the face of almost inaccessible crags, crosses rivers, valleys, and plains in endless succession from one end of the empire to the other—from the seashore on the Gulf of Pechili to the desert wastes of Turkestan. No spot is left unguarded or uncovered, and, no matter how fierce and active were the wild tribesmen who assailed it, or how innumerable were their armies, it is evident that it could, if well defended, even by men armed with nothing better than stones, defy the world up

* From *China*, by James H. Wilson. New York: D. Appleton & Co.



THE GREAT WALL OF CHINA

From Commander Harrie Webster's collection of Chinese pictures

to the day of gunpowder and artillery. It is laid out in total defiance of the rules of military engineering, and yet the walls are so solid and inaccessible, and the gates so well arranged and defended, that it would puzzle a modern army with a first-class siege train to get through it if any effort whatever were made for its defense.

The simple problem of cutting the stone, making the brick, and transporting them to the wall must have been a sore puzzle to those who had it in hand, and it is almost impossible to conceive the means by which the water used in making the mortar could be carried to the mountain tops across such a rough and arid country. It is, of course, known that the movement which crystallized itself in that way was a national, if not a popular, one, and that it was carried through by contingents of men from the various provinces, the men being paid and subsisted by the provinces to which they belonged till they had finished the task assigned them.

GEOGRAPHIC NOTES

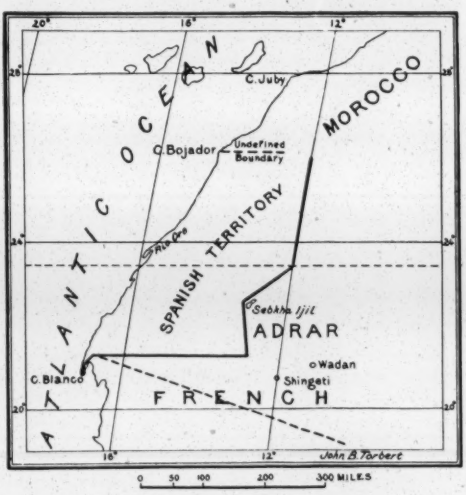
FRANCE has of late become somewhat alarmed at the invasion of Tunis by thousands of Italian farmers and peasants, which if continued will endanger her commercial and political supremacy in central north Africa. It is estimated that in the last two and a half years no less than 10,000 peasants from Sicily and southern Italy have entered the country. They have for the most part acquired and settled upon land along the main routes to and not more than 150 miles distant from the capital, Tunis. The French in Tunis, including soldiers and their dependents, do not exceed 30,000.

Notes on China, a brochure issued by the Adjutant General's Office of the War Department, is a condensed compilation of many facts of interest about the Chinese Empire. The Chinese Army, the permanent military organization, the provincial militia and irregular forces, the forts and arsenals, and the Chinese Navy are well described. A brief description of 20 cities that for strategic and political reasons are most prominent is also appended. A valuable feature of the book is a map, on a scale of two and a quarter miles to the inch, of the Peiho from Taku to Pekin. Persons desiring copies of the report should apply to the Military Information Division of the War Department.

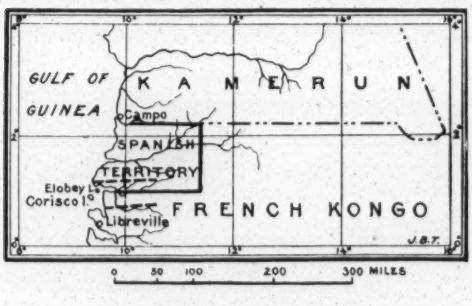
DR NANSEN is at present with Dr Johan Hjort in the *Michael Sars* cruising in the Arctic Ocean. The object of the trip is to study the habits and migrations of the cod and to take hydrographic observations in a portion of the Arctic Ocean between Spitzbergen and Iceland that has never been mapped. Although Dr Nansen has no official position in the expedition, it is understood that he will conduct the hydrographic researches. The *Michael Sars*—named after Dr Nansen's father-in-law, a professor of "fishology"—was built and especially equipped for the Arctic Ocean by the Norwegian government. The expedition sailed some weeks since from the southern part of Norway in a northwesterly direction. Between the Shetland Islands and Iceland Dr Hjort hopes to locate new cod banks and to discover the spawning place of these fish. Then the

ship will sail northeast, and Nansen will conduct his researches between Iceland and Spitzbergen and endeavor to supply the missing link which will connect his work on the *Fram* with that of earlier Norwegian and British investigators.

SEVERAL changes in the map of Africa were made by a convention signed between France and Spain on June 29. In 1885 the Spanish seized the northwest coast of Africa from Cape Blanco northward to about Cape Juby. They gave their new possession the name of Rio de Oro, after a bay thus christened by the Portuguese in the fifteenth century, though neither gold nor a river were to be found there. The following year they pushed into the interior and signed a treaty with the people of Adrar, but they did not inform the European powers of the treaty. In successive years Adrar was overrun by French explorers and thus fell under French influence. By the terms of the convention now concluded, the boundary runs from Cape Blanco in a straight line eastward to about 13° longitude, thence to the northwest around Sebkha Ijil, a dry salt lake, then due east to the 12th meridian, which it follows to Morocco, where it becomes indefinite, as the boundary between Morocco and Rio de Oro is not defined. The territory in northwest Africa credited on current maps to Spain is thus considerably reduced by the convention.



Projecting into French Kongo is a small bit of Spanish territory. Spain has always claimed that her rights extended further into the interior, almost to Ubangi, but with the exception of the islands Elobey and Corisco she has never exercised any jurisdiction over this land. France has never recognized the title of Spain to any of the mainland, and on French maps only the islands Elobey and Corisco are given as belonging to Spain. By the terms of the new treaty, however, Spain acquires about 1,000 square miles, the northern boundary of her possession touching German Kamerun. France gains the privilege of purchasing the piece if Spain ever desires to be freed of it.



WHILE with every other quarter of the world the export trade of the United States is increasing at a phenomenal rate, with South America it has remained almost stationary since 1890. In 1890 the United States sent goods to the value of $38,752,648 to that continent, but during the twelve months, July 1, 1899–June 30, 1900, the value of goods exported thither reached only $38,945,721—that is, in the last ten years the value of the export trade to South America has increased less than half of one per cent; this, too, notwithstanding the good work of the Bureau of American Republics, founded in 1890 "for the prompt collection and distribution of commercial information concerning the American republics." The exports of the United States to the nations of Europe during 1899–1900 show an increase in value of 52 per cent over the exports of 1890, their value in the fiscal year just ended being $1,040,167,312, as against $683,736,397 in 1890. The export trade with Asiatic peoples has in the last ten years increased 229 per cent, being valued at $19,696,820 in 1890 and $64,913,984 in 1899–1900, while the exports to Africa were $4,613,702 in 1890, and are now $19,469,109, an increase of 321 per cent.

The four great facts in the foreign commerce of the United States for the year ending June 30, 1900, as summarized by Mr O. P. Austin, are:

1. The total commerce of the year surpassed by $317,729,250 that of any preceding year, and for the first time in the history of the United States exceeded two billion dollars.

2. The exports exceeded those of any preceding year, and were more widely distributed throughout the world than ever before.

3. Manufacturers' materials were more freely imported and formed a larger share of the total imports than ever before.

4. Manufactured articles were more freely exported and formed a much larger share of the total exports than in any year since the United States became a nation.

IT is a strange coincidence that the world's pro luction of gold during the last half of the nineteenth century should exceed the output during the first half in the ratio of "16 to 1." In figures the production for the fifty years ending with 1899 was $6,596,832,000, as against $787,460,000 for the preceding fifty years. The production of gold during the last half of the nineteenth century was also more than double that during the 360 years following the discovery of the American continent, the total output from 1492 to 1850 being $3,159,230,000. In 1899, for the first time since the phenomenal production of the California mines in 1853, the amount of gold mined in the United States, including Alaska, exceeded the production of that record year. The gold mined in the United States last year was valued at $72,500,000, or seven and one half million dollars more than in 1853.

THE comprehensive dictionary of the Natick (Indian) language of Massachusetts, on which the late James Hammond Trumbull spent many years of labor, is to be published by the Bureau of American Ethnology. With the exception of the famous Eliot Indian Bible, this is the most interesting and valuable record of the language of the Indians of New England.

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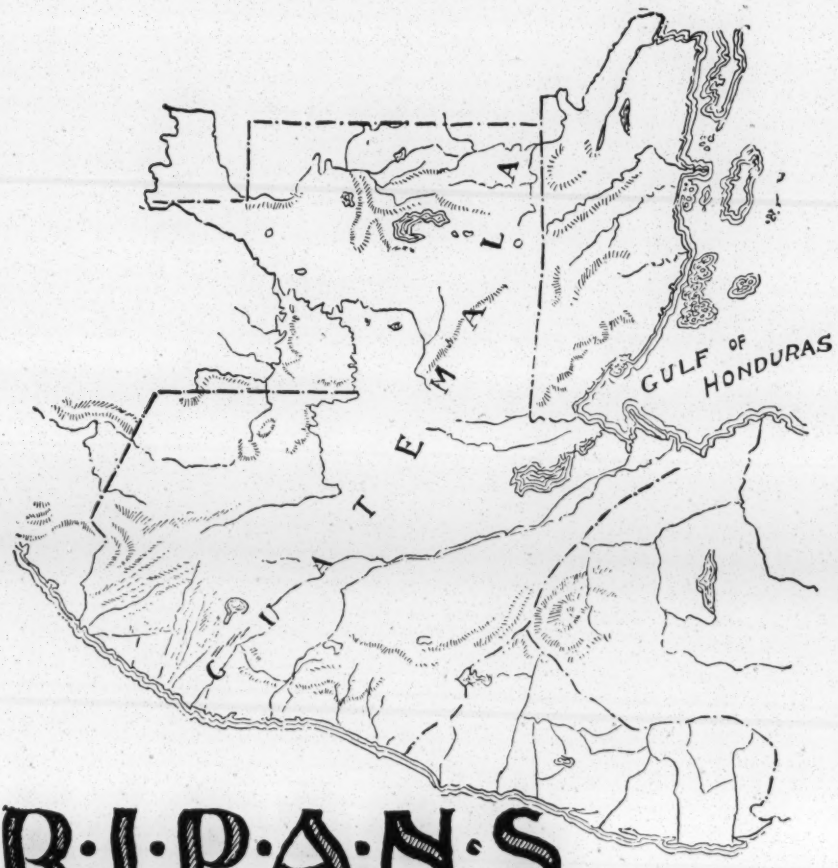

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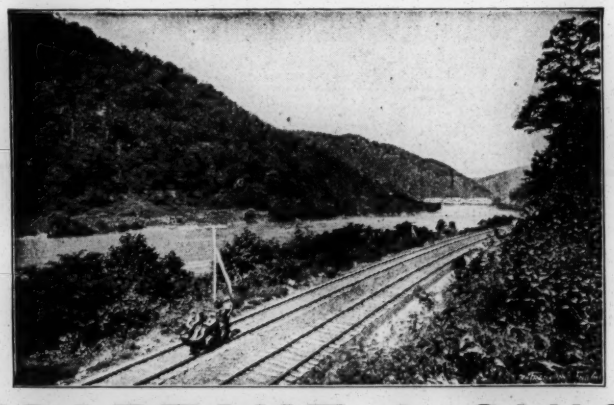

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